The PHOTOFACT Servicer

SET 449 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ JULY 1959

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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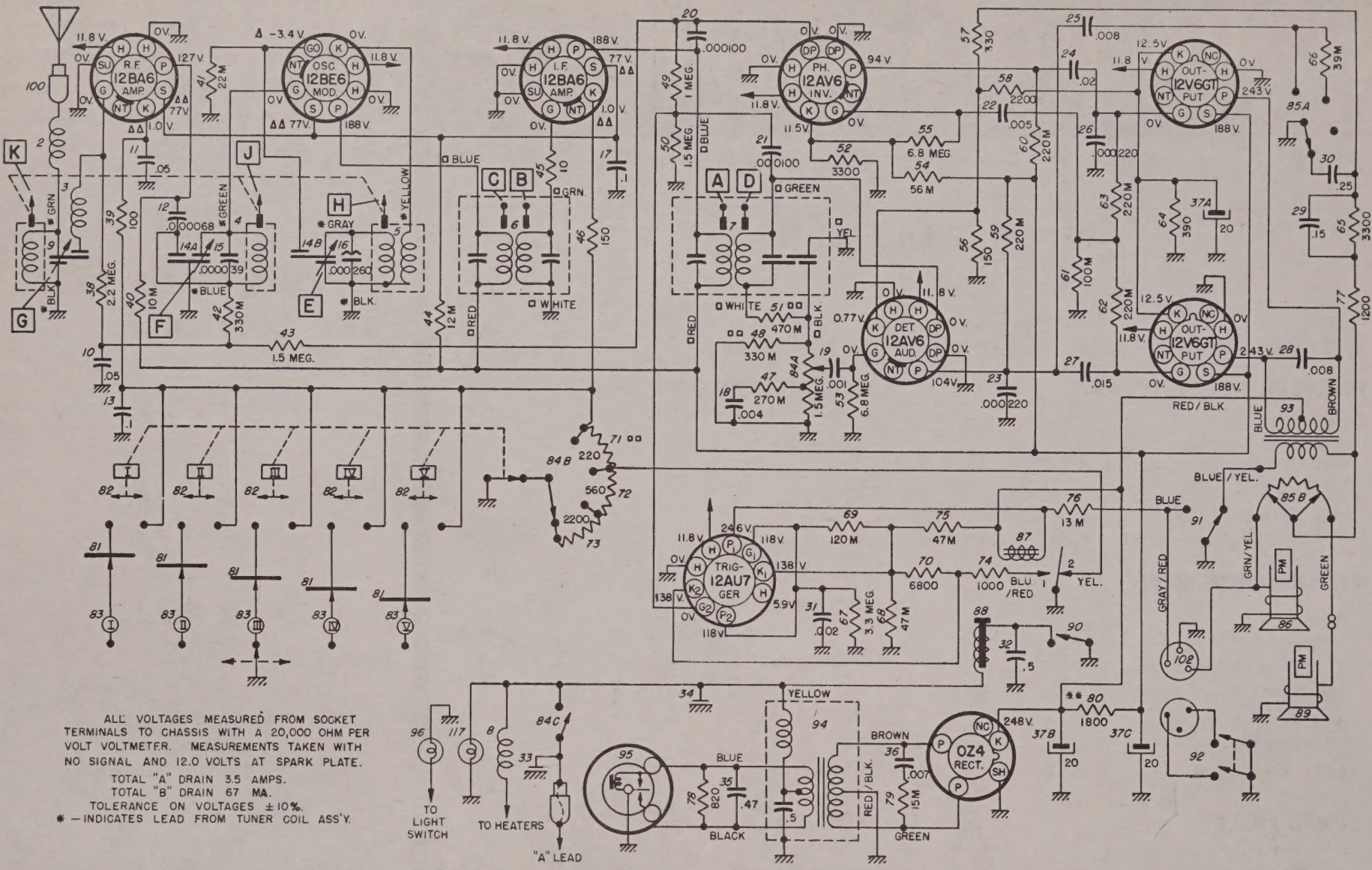
7263525, 7263545

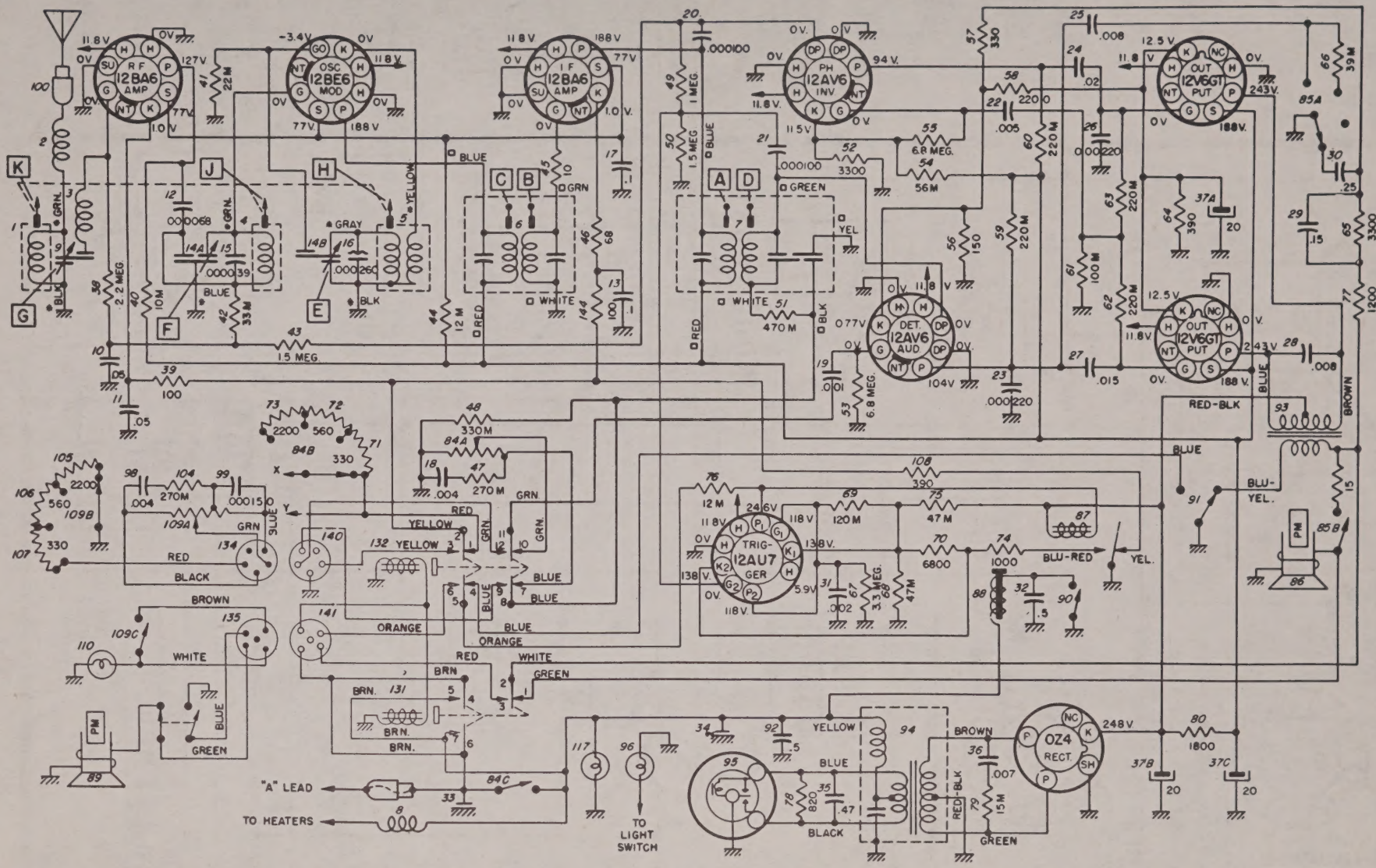
Cadillac Model
7263835

Chevrolet Model
985425


R.F. 12BA6 AMP.
OSC. 12BE6 MOD.
I.F. 12BA6 AMP.
PH. 12AV6 INV.
DET. 12AV6 AUD.
OUT- 12V6GT PUT
OUT- 12V6GT PUT
TRIG- 12AU7 GER
0Z4 RECT.
ALL VOLTAGES MEASURED FROM SOCKET TERMINALS TO CHASSIS WITH A 20,000 OHM PER VOLT VOLTMETER. MEASUREMENTS TAKEN WITH NO SIGNAL AND 12.0 VOLTS AT SPARK PLATE.
TOTAL "A" DRAIN 3.5 AMPS.
TOTAL "B" DRAIN 67 MA.
TOLERANCE ON VOLTAGES ±10%.
* — INDICATES LEAD FROM TUNER COIL ASS'Y.
TO LIGHT SWITCH
TO HEATERS
"A" LEAD

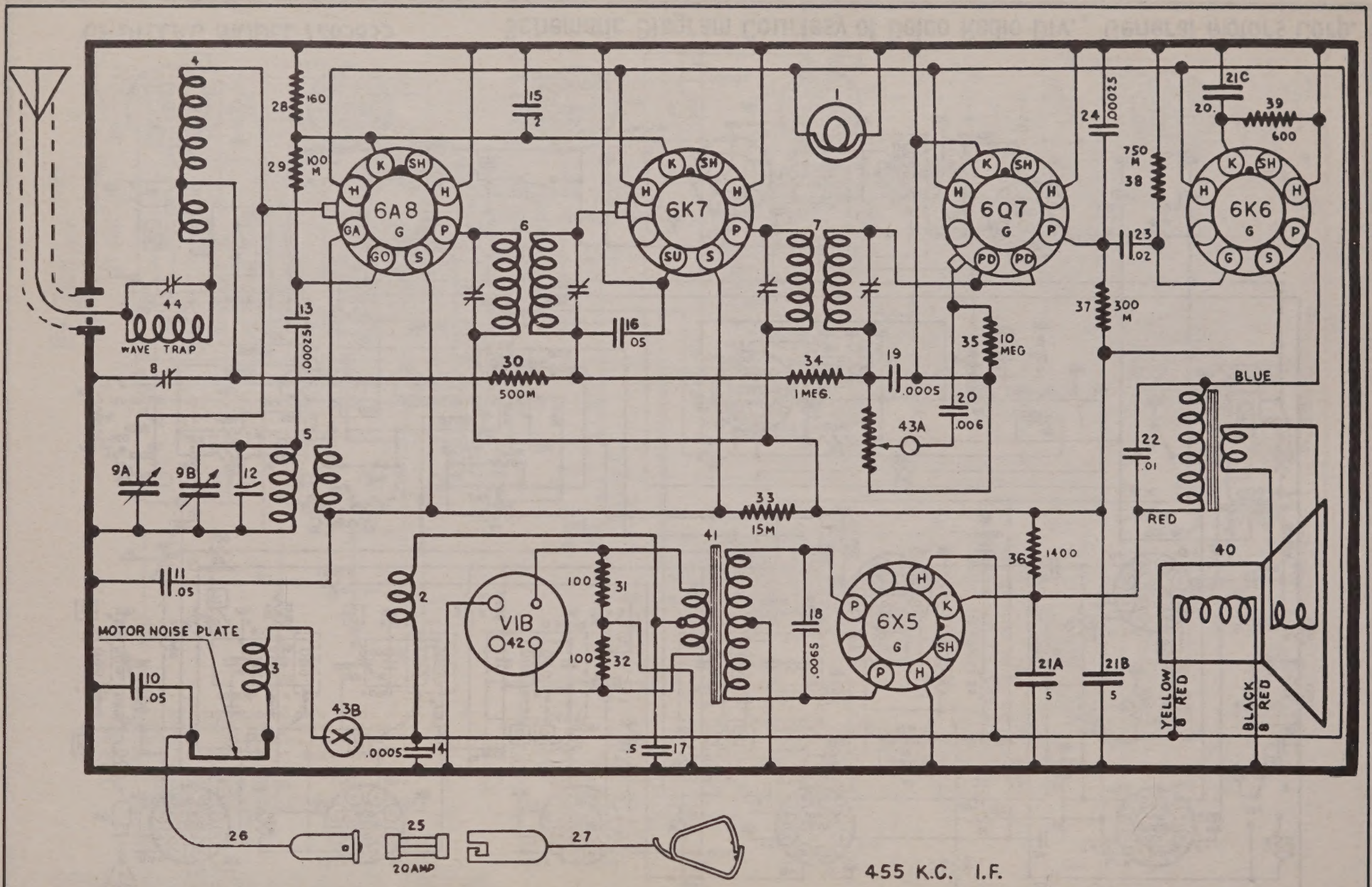
CADILLAC MODELS 7263525, 7263545

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.



CADILLAC MODEL 7263835

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.



CHEVROLET MODEL 985425

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.

PHOTOFACT* Folder

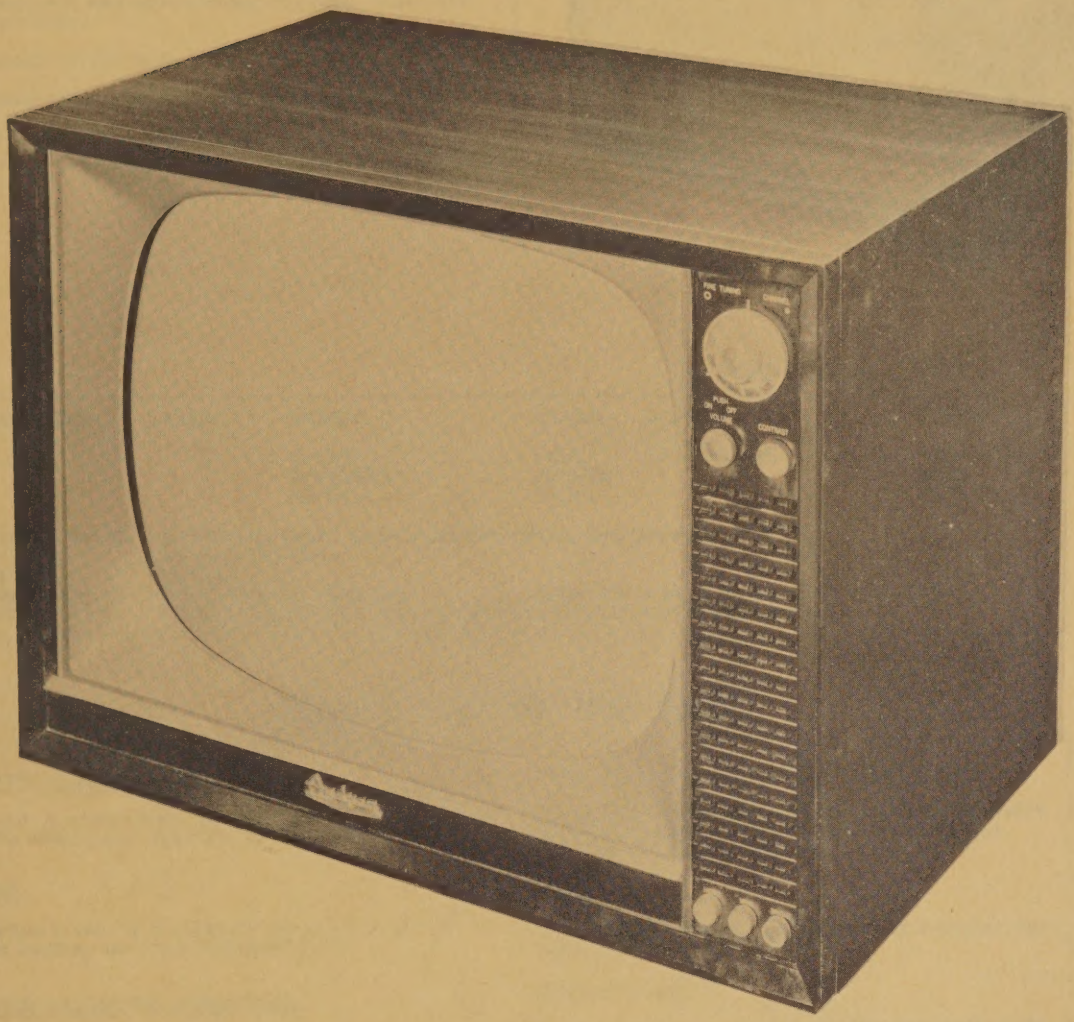
ANDREA MODELS LB-VR121, (50), T-VR121, (50) (Ch. VR-121-1, VR-121-1 (50), VR-321, VR-321 (50)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ANDREA MODELS LB-VR121, (50), T-VR121, (50) (Ch. VR-121-1, VR-121-1 (50), VR-321, VR-321 (50)



MODEL T-VR121 (Ch. VR121)

ANDREA MODELS LB-VR121, (50), T-VR121, (50) (Ch. VR-121-1, VR-121-1 (50), VR-321, VR-321 (50)

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SET 449 FOLDER 1

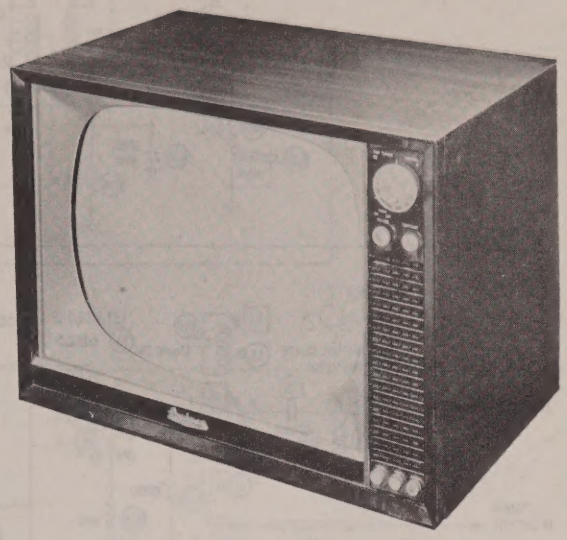
ANDREA MODELS LB-VR121, (50), T-VR121, (50) (Ch. VR-121-1, VR-121-1 (50), VR-321, VR-321 (50)

ANDREA MODELS LB-VR121, (50), T-VR121, (50) (Ch. VR-121-1, VR-121-1 (50), VR-321, VR-321 (50)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL T-VR121

1. Remove 7 push-on type knobs from the front.
2. Remove 12 wood screws holding rear cover. Remove the rear cover.
3. Remove speaker leads.
4. Remove 2 wood screws holding picture tube brackets.
5. Remove 4 bottom chassis bolts.



MODEL T-VR121 (Ch. VR121)

TRADE NAME	Andrea	MODELS	CHASSIS	MODELS	CHASSIS
		T-VR121	VR121	LB-VR121-1(50)	VR121-1(50)
		T-VR121(50)	VR121(50)		VR321
		LB-VR121	VR121-1		VR321(50)
MANUFACTURER	Andrea Radio Corp., 27-01 Bridge Plaza North, Long Island City, N.Y.				
TYPE SET	Television Receiver				
TUBES	Eighteen				
POWER SUPPLY	110-120 Volts AC, 50/60 Cycle		RATING 200 Watts, 1.85 Amp. @ 117 Volts AC 60~		
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)				

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 4 screws holding the trim strip at the bottom edge of the safety glass. Tilt glass out and remove.

FUSE

One fuse is used for horizontal sweep circuit protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

No provision is made to vary the AGC on this receiver.

FOCUS

No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency slug. (For location, see'Tube Placement Chart".)

WIDTH

The width may be varied by a Width coil. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive control. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (A9) located on top of the chassis.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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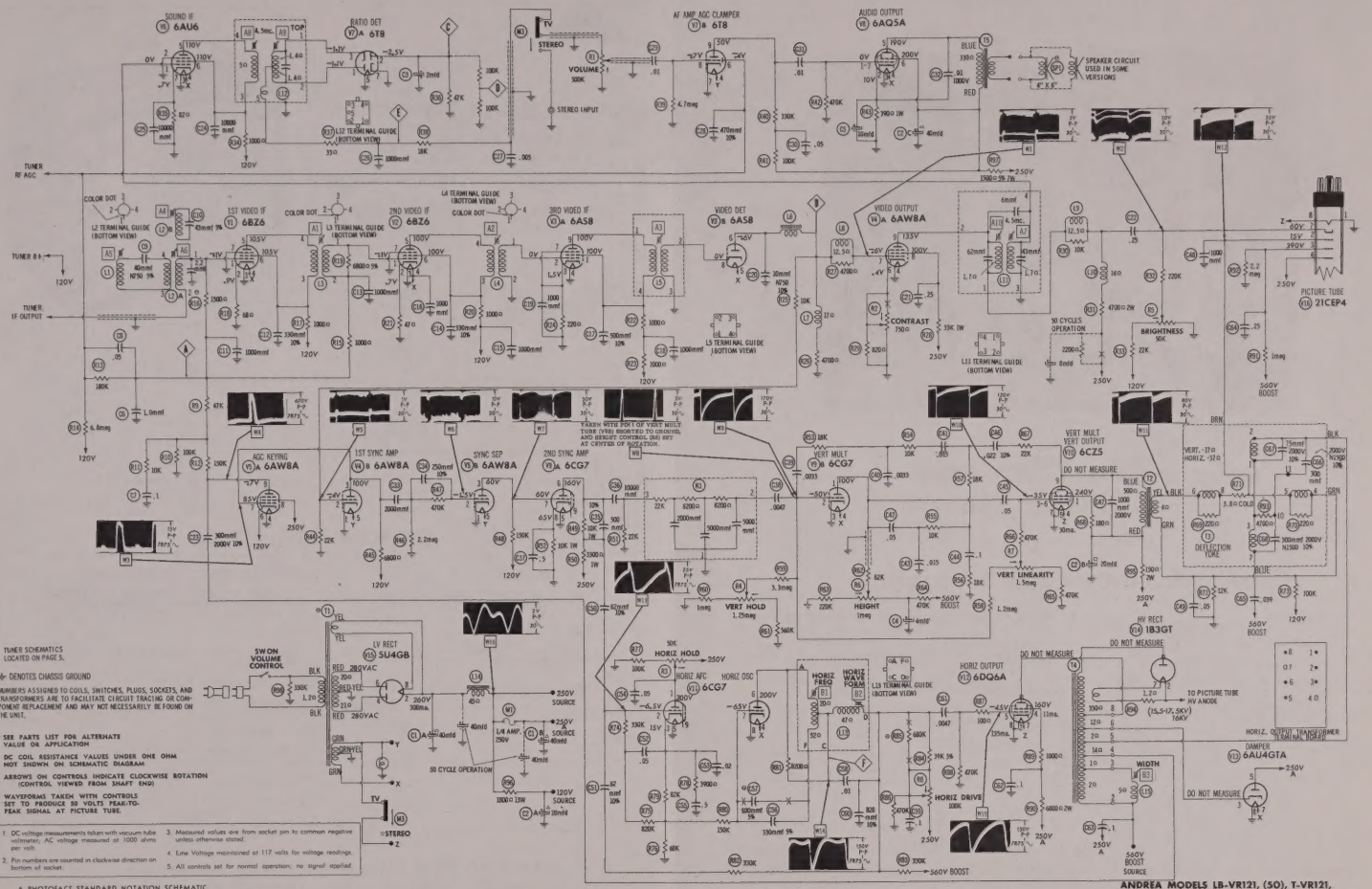
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JA270


SOUND IF V6 6AU6
RATIO DET V7 A 6T8
AF AMP, AGC CLAMPER V7 B 6T8
AUDIO OUTPUT V8 6AQ5A
SPEAKER CIRCUIT USED IN SOME VERSIONS
TUNER RF AGC
TUNER B+
TUNER IF OUTPUT
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6AS8
VIDEO DET V3 B 6AS8
VIDEO OUTPUT V4 6AW8A
PICTURE TUBE V16 21CEP4
CONTRAST
BRIGHTNESS
50 CYCLES OPERATION
AGC KEYING V5 A 6AW8A
1ST SYNC AMP V4 B 6AW8A
SYNC SEP V5 B 6AW8A
2ND SYNC AMP V9 A 6CG7
VERT MULT V9 B 6CG7
VERT MULT VERT OUTPUT V12 6CZ5
DO NOT MEASURE
VERT LINEARITY
HEIGHT
VERT HOLD
DEFLECTION YOKE
HV RECT V14 1B3GT
HORIZ AFC V11 6CG7
HORIZ OSC
HORIZ HOLD
HORIZ FREQ
HORIZ WAVE FORM
HORIZ OUTPUT V13 6DQ6A
HORIZ DRIVE
WIDTH
DAMPER V13 6AU4GTA
TO PICTURE TUBE HV ANODE
HORIZ. OUTPUT TRANSFORMER (TERMINAL BOARD)
LV RECT V15 5U4GB
SW ON VOLUME CONTROL
50 CYCLE OPERATION
VOLUME
STEREO INPUT
STEREO
TV
TUNER SCHEMATICS LOCATED ON PAGE 5.
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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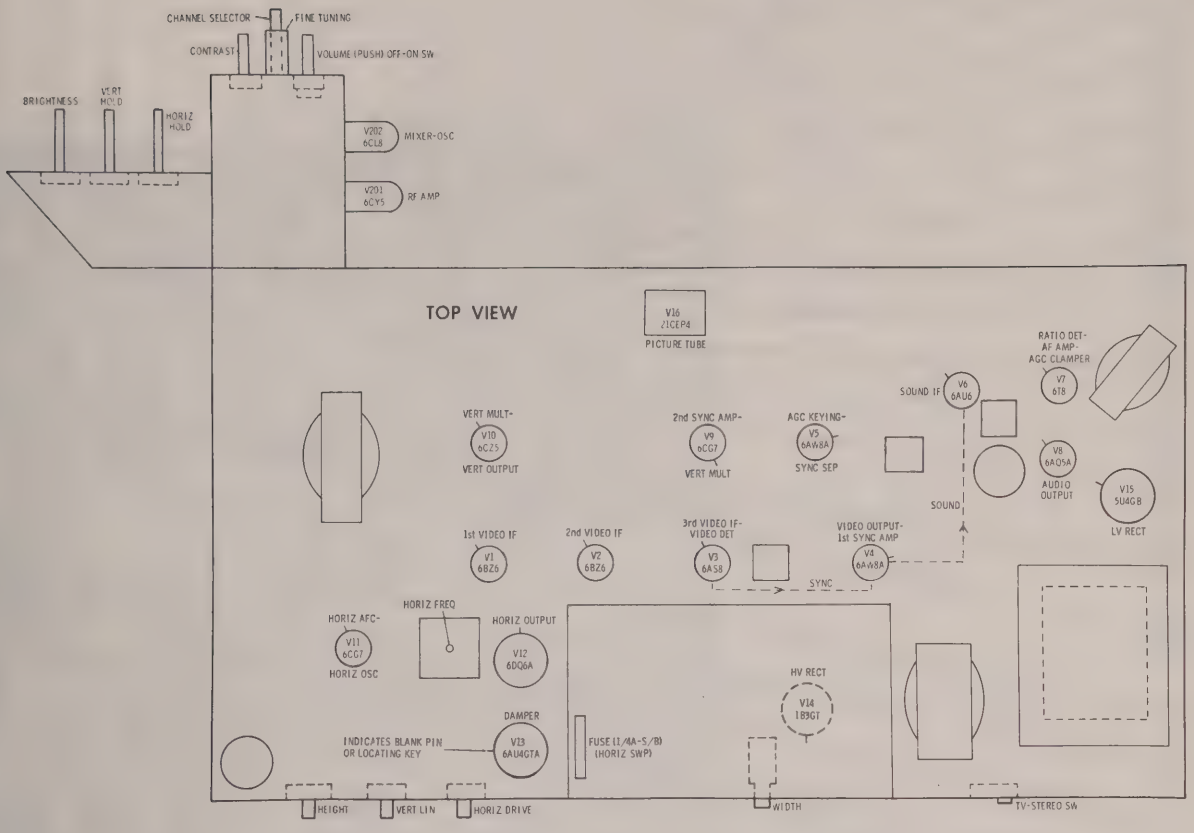
ANDREA MODELS LB-VR121, (50), T-VR121, (50) (Ch. VR-121-1, VR-121-1 (50), VR-321, VR-321 (50)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

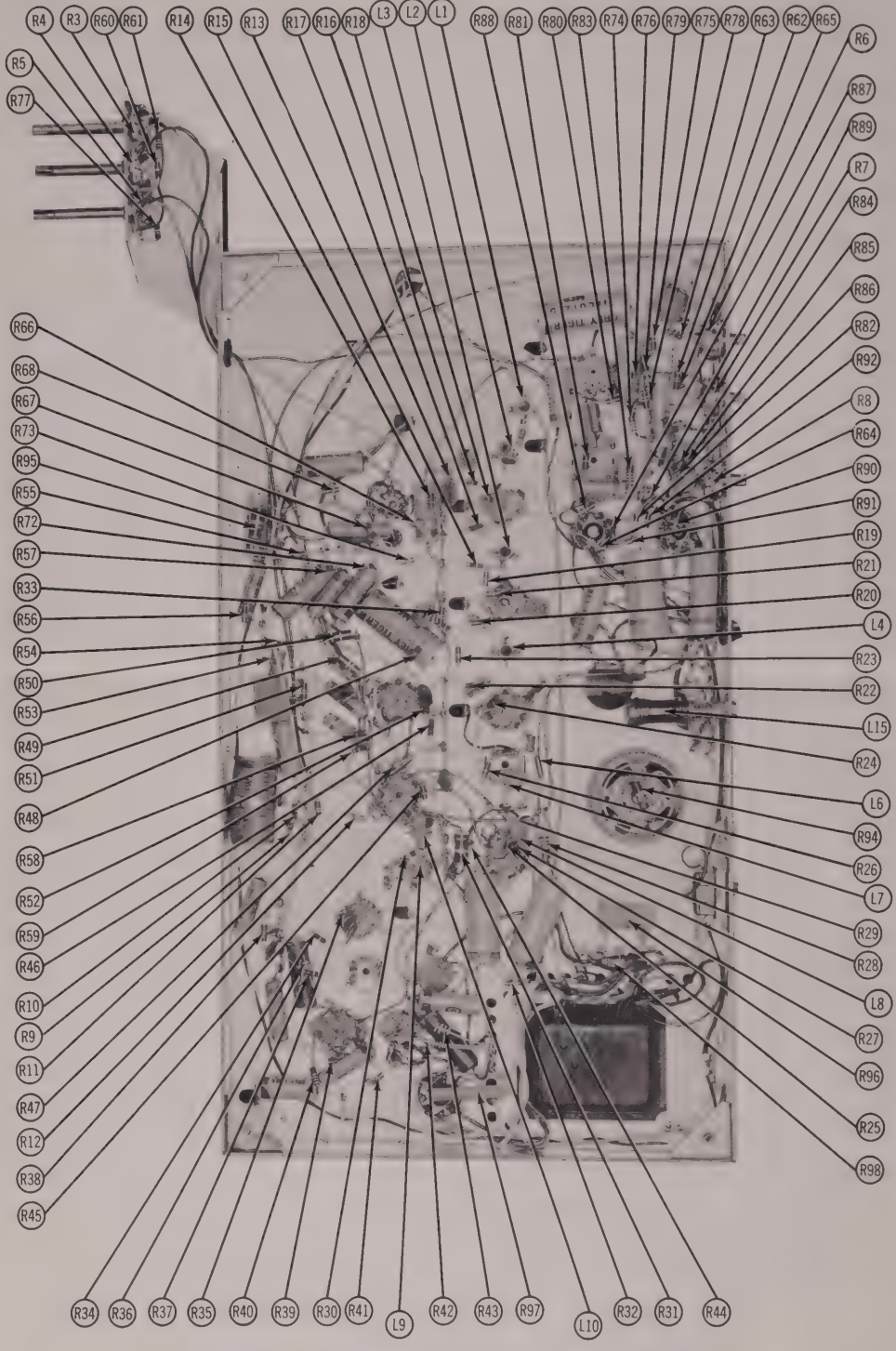
The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound V15

SWEEP FAILURE
No raster, has sound V11, V12, Fuse (1/4A), V13, V14, V16, V15
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V9, V10
Horiz. off freq. V11

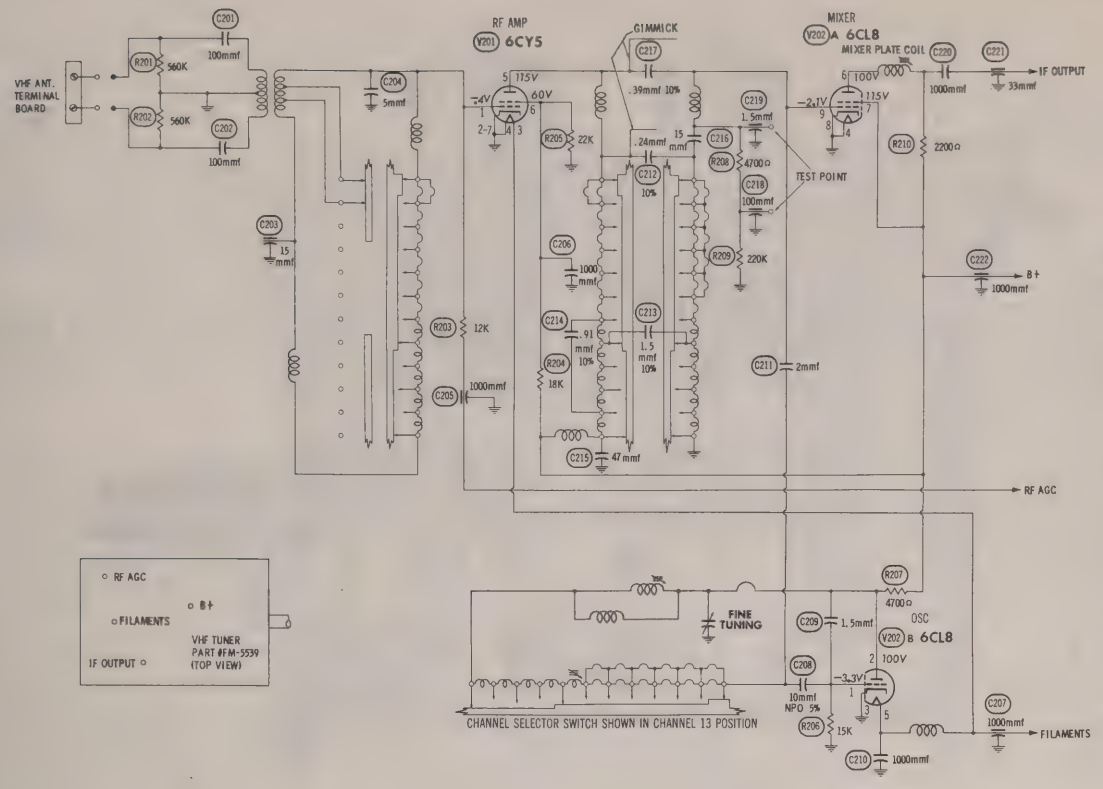
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V6, V7, V8
Overloaded picture V5, V7

SYNC FAILURE
No vert. sync V4, V5, V9
No horiz. sync V4, V5, V9, V11
No vert. or horiz. sync V4, V5, V9



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

ANDREA MODELS LB-VR121, (50), T-VR121, (50) (Ch. VR-121-1, VR-121-1 (50), VR-321, VR-321 (50)



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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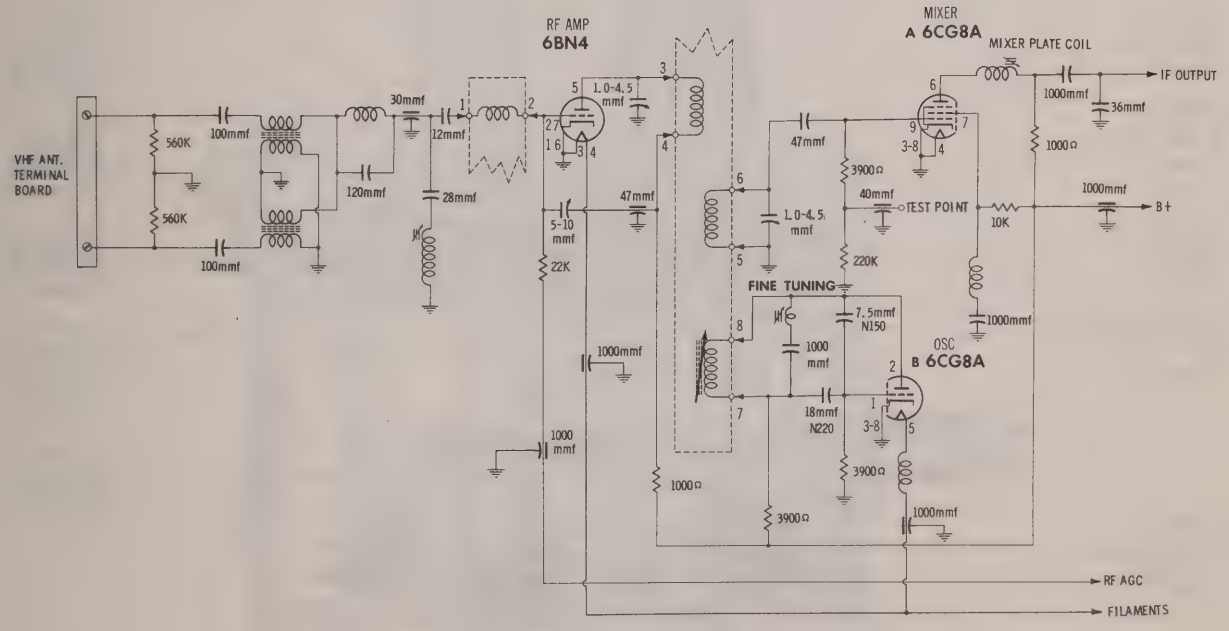
VHF TUNER FM-5539



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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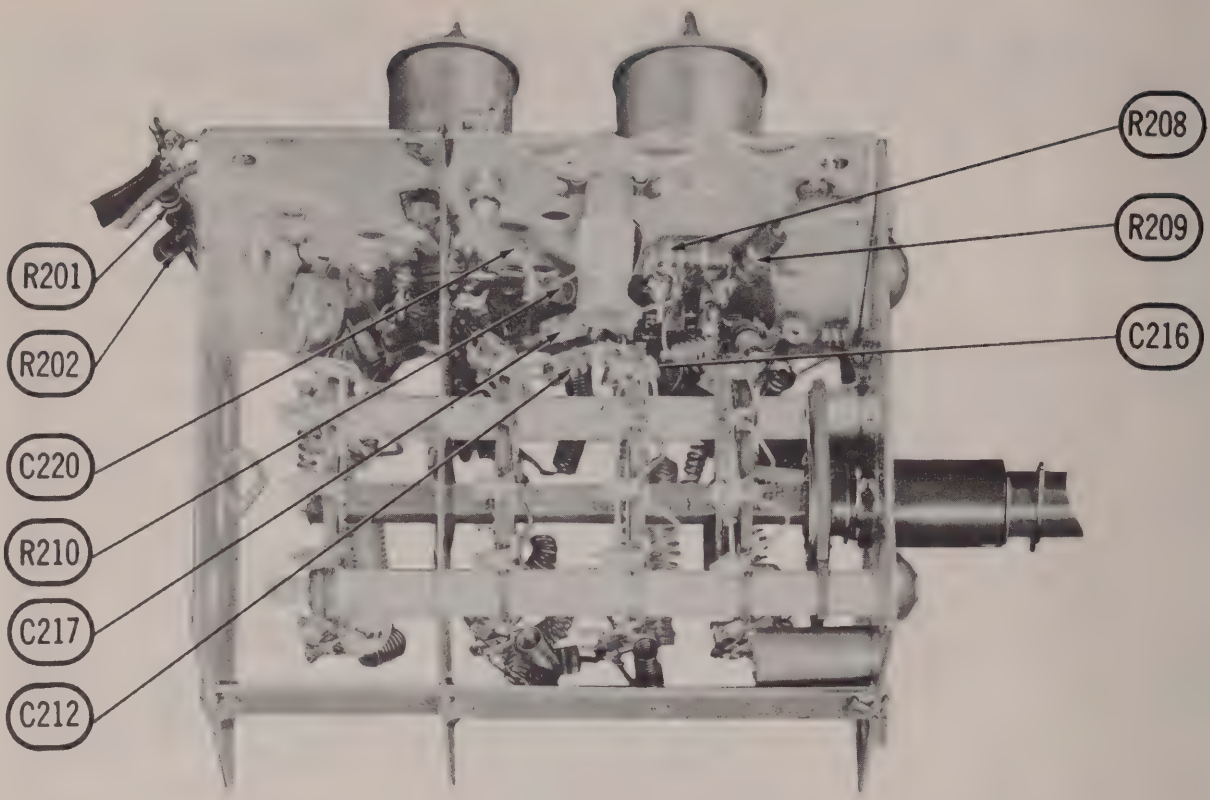
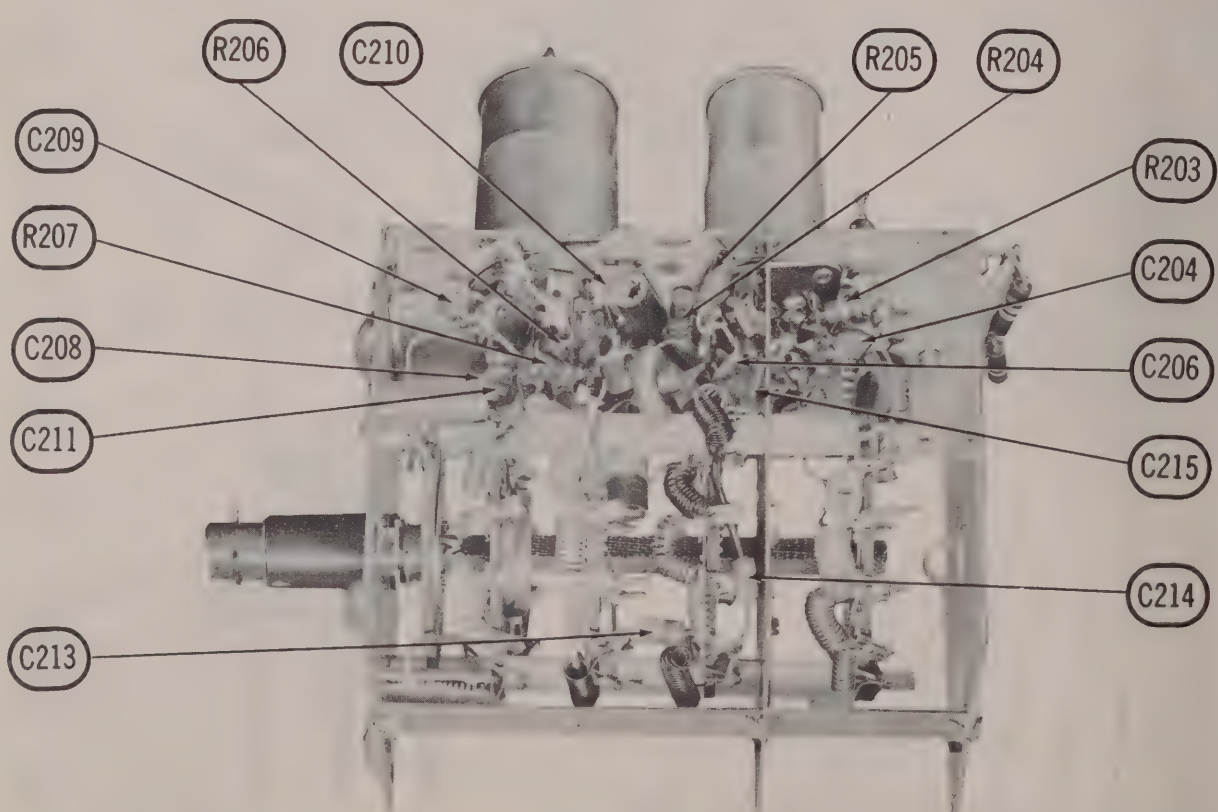
VHF TUNER FM-5551



TUNER FM-5539 - LEFT SIDE



TUNER FM-5539 - RIGHT SIDE

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Place TV/Stereo switch in Stereo position.
Suggested Alignment Tools: GENERAL CEMENT #8608, 8606L, 8282, 9295
WALSCO #2528, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point Ⓐ . Positive to chassis.
Attenuate sweep generator output to maintain between 2 and 3 volts peak to peak on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Disconnect IF Input coil from pin 1 (grid) of the 1st Video IF Amp.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 1st Video IF Amp. Low side to chassis.	44.0MC (10MC Swp)	41.25MC 42.5MC 43.0MC 45.0MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. to point Ⓑ . Low side to chassis. (Across Video Det. load)	A1, A2, A3	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. A1 controls position of 45.75MC marker, A2 controls bandwidth and low frequency skirt of curve, and A3 controls tilt. Reconnect IF Input coil to grid of 1st Video IF.
2.		Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	"	"	"	A4, A5, A6, & Mixer Plate Coil	Adjust A4 to place 41.25MC marker in trap notch. Adjust A5 to place 47.25MC marker in other trap notch. Adjust A6 and Mixer Plate Coil for maximum flatness and position of 45.75MC marker as in Fig. 1 If necessary, repeat steps 1 and 2.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point Ⓒ to chassis. The junction of these two resistors is alignment point Ⓓ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	.005mfd	High side to point Ⓑ . Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓒ . Common to chassis.	A7, A8	Adjust for maximum deflection.
4.	"	"	"	"	DC probe to point Ⓓ . Common to point Ⓔ .	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and adjust the Fine Tuning until a 4.5MC beat pattern is noted in the picture. Adjust A10 until the horizontal scanning lines are smooth and continuous.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 11.

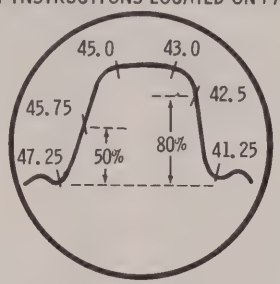
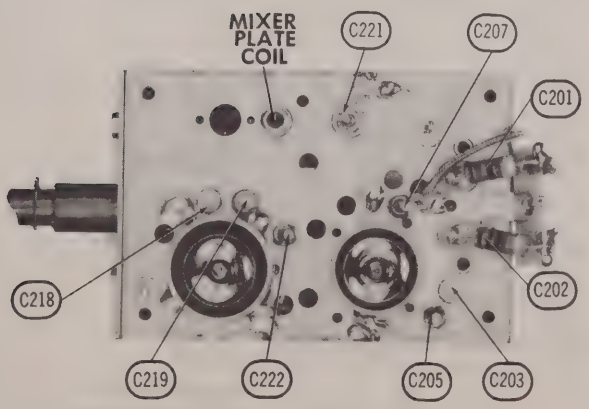


FIG. 1



TUNER FM-5539 TOP VIEW

SET 449 FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	6BZ6	
V2	2nd Video IF Amp	6BZ6	
V3	3rd Video IF Amp - Video Det.	6AH8	
V4	Video Output-1st Sync Amp.	6AW8A	
V5	AGC, keying Sync Sep.	6AW8A	
V6	Sound IF Amp.	6AU6	
V7	Ratio Det.-AF Amp.- AGC Clamper	6T9	
V8	Audio Output	6AQ5A	
V9	2nd Sync Amp -Vert Multi	6CL7	
V10	Vert Mult -Vert Output	6CZ5	
V11	Horiz. A.F.C.-Horiz. Gen.	6CG7	
V12	Horiz. Output	6DQ6A	
V13	Damper	6AU4GTA	
V14	HV Rect.	1B3GT	
V15	L.V Rect.	5U4GB	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	ANDREA Part No.	GENERAL ELECTRIC Part No.	RCA Part No.	SYLVANIA Part No.	
V16	RCE#24		RCE#24 1	RCE#24 2	1 Aluminized 2 "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA					NOTES
	CAP	VOLT	ANDREA Part No.	ASEROVOX Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	SPRAGUE Part No.	
C1A	+40	450	ECE-1340	AFE3-57	BD450	FP338	TVL-5784	
B	+40	450						
C2A	+20	450	ECE-1341	AFE3-50-55	CGS7S	FP398.1	TVQ-90	TVL-5815.6
B	+30	450						
C	+40	450						
C3	2	50	HCE-1342	PR350V2	BBR2-50	TC302	TD-2-50	TVA-1301
C4	4	450	HCE-1354	PR450V4	BM445	TC70	TD-4-450	TVA-1702
C5	10	25	HCE-1329	PR25V10	BBR10-25	TC72	TD-10-25	TVA-1204

FIXED CAPACITORS

Capacity values given in the rating column are in mfd for Paper Capacitors, and in mmfd for Mica and Ceramic Capacitors.

ITEM No	RATING			REPLACEMENT DATA						NOTES
	CAP	VOLT	TOL	ANDREA Part No.	ASEROVOX Part No.	CENTRALAB Part No.	CORNELL DUBILIER Part No.	MALLORY Part No.	SPRAGUE Part No.	
C6	1.0	100		HCT-1027-1	P288N-1.0		CUB2W1	GEM-21	2TM-M1	
C7	1	200		HCT-1013	P288N-1	DF-104	CUD2P1	GEM-201	2TM-P1	
C8	.05	400		HCT-1003	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C9	40		N750 5%	HCT-1907	N750-S1 39		CUQ2FU	CNT-438	5TCU-Q43 5% *	
C10	43		5%		1489-000043	TCZ-43	22R5Q43		M3-443	
C11	1000			HCC-1950	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C12	330		10%	HCC-1837		D6-331	LJ0T33	JL-333	5GA-T33S 10% *	
C13	1000			HCC-1950	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C14	330		10%	HCC-1837		D6-331	LJ0T33	JL-333	5GA-T33S 10% *	
C15	1000			HCC-1950	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C16	1000			HCC-1950	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C17	500		10%	HCM-1825A	1489-0005	D6-501	22R5T51	MCB245	M5-550	
C18	1000			HCC-1950	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C19	1000			HCC-1950	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C20	10		N750 10%	HCC-1923	N750-S1 10	TCN-10	CUB4P25	GEM-4025	4TM-P25	
C21	25	400		HCT-1015	P488N-25		CUB4P25	GEM-4025	4TM-P25	
C22	25	400		HCT-1015	P488N-25		CUB4P25	GEM-4025	4TM-P25	
C23	300	2000	10%	HCM-682C2K		DD30-301	BY3D2T3	SEV-327	20CA-T3	
C24	10000			HCC-1943	BPD-01	DD-103	BYA10S1	B-210	5HK-S1	
C25	10000			HCC-1943	BPD-01	DD-103	BYA10S1	B-210	5HK-S1	
C26	1000			HCC-1950	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C27	005	600		HCT-1017	P688N-005	DD6-502	CUB6D5	GEM-625	6TM-D5	
C28	470		10%	HCC-1948		D6-471	SR5T47	JL-347	5GA-T47S 10% *	
C29	01	600		HCT-1008	P688N-01	D6-103	CUB6D	GEM-611	6TM-S1	
C30	05	600		HCT-1003	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C31	01	600		HCT-1008	P688N-01	D6-103	CUB6D	GEM-611	6TM-S1	
C32	01	1000		HCT-1009	P688N-01	DD-103	CUB6D	GEM-611	6TM-S1	
C33	0005			HCC-1946	BPD-002	DD-302	BYA10D3	B-230	5HK-D2	
C34	250		10%	HCM-1824C	1489-00025	D6-251	5R5T27	MCB240	M5-235	
C35	200		10%	HCM-1828A	1489-005	D6-501	5R5T5	MCB545	M5-550	
C36	10000			HCC-1943	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C37	5	300		HCC-1933	P288N-5		CUB2P5	GEM-205	2TM-P5	
C38	0047	400		HCT-1055	P488N-0047	D6-472	CUB6D47	GEM-5247	6TM-D47	
C39	0033	400		HCT-1056	P488N-0033	D6-332	CUB6D33	GEM-6323	6TM-D33	
C40	0033	400		HCT-1056	P488N-0033	D6-332	CUB6D33	GEM-6323	6TM-D33	
C41	015	400		HCT-1020	P488N-015	DD6-153	CUB6S15	GEM-6115	6TM-S15	
C42	05	400		HCT-1003	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C43	015	400		HCT-1020	P488N-015	DD6-153	CUB6S15	GEM-6115	6TM-S15	
C44	1	400		HCT-1054	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C45	05	400		HCT-1003	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C46	033	400	10%	HCT-1051	V84C4S33		FM4S33	GTM-4122	4TM-S22	
C47	1000	2000		HCC-1988	BYD-30-1000	DD30-102	BY3D2U1	SEV-320	20GA-D1	
C48	10000			HCC-1943	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C49	05	400		HCT-1003	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C50	82		10%	HCM-1853A	1489-000082	D6-820	22R5Q82	CNO-482	M3-482	
C51	82		10%	HCM-1853A	1489-000082	D6-820	22R5Q82	CNO-482	M3-482	
C52	05	400		HCT-1003	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C53	02	600		HCT-1020	P688N-02	DD-203	CUB6S2	GEM-612	6TM-S2	
C54	05	400		HCT-1003	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C55	5	300		HCT-1033	P288N-5		CUB2P5	GEM-205	2TM-P5	
C56	330		5%	HCM-1552	1489-00033	TCZ-100	22R5T1	MCB225	M5-31	1
C57	100		5%		1489-0001		CUB6S1	GTM-611	6TM-S1	
C58	01	600		HCT-1006	P688N-01	D6-103	CUB6D	GEM-611	6TM-S1	
C59	1	600		HCT-1045	P688N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C60	820		10%	HCM-1830A	1489-00082		22R5T82	MCB251	M3-582	
C61	0047	400		HCT-1055	P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C62	1	600		HCT-1002	P688N-1	DF-104	CUB4P1	GEM-601	6TM-P1	
C63	1	600		HCT-1045	P688N-1	DF-104	CUB4P1	GEM-601	6TM-P1	
C64	25	600		HCT-1016	P688N-25		CUB6P25	GEM-6025	6TM-P25	
C65	039	600		HCT-1061	P688N-04	DF-403	CUB684	GEM-614	6TM-S4	
C66	3300	3000	N1500 10%	HCC-1984					30GA-Q758 10%*	
C67	75	2000	10%	HCC-1985						
C68	330	3000	N1500 10%	HCC-1984						

* Not used in some versions
* Not normally in distributors' stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ANDREA Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	IRC Part No.	MALLORY Part No.	
R1A	500K	1	GRV-859					Volume
B	Switch							Push-Push Off-On
R2A	750Ω	1	GRV-870	B-415	A47-750-A	QJ7-105	PP55A	Contrast
B	Shaft			Not Req.	FB-3	Not Req.	U3	
R3A	50K	1	GRV-847-1	B-31	A47-50K-S	QJ-133	Not Req.	Horiz. Hold
B	Shaft			Not Req.	KB6-3	Not Req.	U35	
R4A	1.25meg	1	GRV-846-1	B-743	A47-1.25meg-S	QJ-130	Not Req.	Vert. Hold
B	Shaft			Not Req.	KB8-3	Not Req.	GU56	
R5A	50K	1	GRV-847-1	B-31	A47-50K-S	QJ-133	Not Req.	Brightness
B	Shaft			Not Req.	KB6-3	Not Req.	U35	
R6A	1meg	1	GRV-866		B47-1meg-S	BU-137	Not Req.	Height
B	Shaft				Not Req.	TM3	TA156L	
R7A	1.5meg	1	GRV-861		B47-1.5meg-S	BU-138	TA156L	Vert Linearity
B	Shaft				Not Req.	TM3	Not Req.	
R8A	100K	1	GRV-868		B47-100K-S	BU-135	TA15L	Horiz. Drive
B	Shaft				Not Req.	TM3	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING		ANDREA Part No.	NOTES
	OHMS	WATT		
R9	47K		GRC-307	
R10	100K		GRC-325	
R11	10K		GRC-304	
R12	180K		GRC-328	
R13	180K		GRC-328	
R14	6.8meg		GRC-340	
R15	1000Ω		GRC-210	
R16	15000		GRC-259	
R17	1000Ω		GRC-232	
R18	680		GRC-214	
R19	68000	5%	GRC-254	
R20	1000Ω		GRC-232	
R21	47Ω		GRC-201	
R22	1000Ω		GRC-210	
R23	1000Ω		GRC-210	
R24	220Ω		GRC-218	
R25	10K		GRC-304	
R26	2700Ω		GRC-205	
R27	4700Ω		GRC-209	
R28	33K	1	GRC-281	
R29	820Ω		GRC-298	
R30	10K		GRC-304	
R31	4700Ω	2	GRC-238	
R32	220K		GRC-270	
R33	82Ω		GRC-201	
R34	1000Ω		GRC-210	
R35	82Ω		GRC-215	
R36	47K		GRC-307	
R37	33Ω		GRC-289	
R38	18K		GRC-330	
R39	4.7meg		GRC-343	
R40	270Ω		GRC-301	
R41	100K		GRC-325	
R42	470K		GRC-228	
R43	390Ω	1	GRC-277	
R44	22K		GRC-261	
R45	6800Ω		GRC-22	
R46	2.2meg		GRC-230	
R47	470K		GRC-228	
R48	150K		GRC-245	
R49	10K	1	GRC-323	
R50	3300Ω	1	GRC-254	
R51	22K		GRC-261	
R52	10K		GRC-323	
R53	18K		GRC-330	

Note 1. Ch. VR-321 uses 2700Ω in this application (Part #GRC-278).

ITEM No	RATING		ANDREA Part No.	NOTES
	OHMS	WATT		
R54	10K		GRC-304	
R55	10K		GRC-304	
R56	18K		GRC-330	
R57	18K		GRC-330	
R58	1.8meg		GRC-359	
R59	3.3meg		GRC-339	
R60	1meg		GRC-274	
R61	560K		GRC-305	
R62	82K		GRC-241	
R63	820K		GRC-270	
R64	470K		GRC-228	
R65	470K		GRC-228	
R66	470K		GRC-228	
R67	22K		GRC-201	
R68	180Ω		GRC-225	
R69	220Ω		GRC-218	
R70	330Ω		GRC-218	
R71	5.6Ω	Cold		
R72	12K		GRC-273	
R73	100K		GRC-258	
R74	330K		GRC-301	
R75	82K		GRC-249	
R76	68K		GRC-204	
R77	100K		GRC-258	
R78	3900Ω		GRC-249	
R79	82K		GRC-241	
R80	150K		GRC-243	
R81	8200Ω		GRC-285	
R82	330K		GRC-301	
R83	330K		GRC-301	
R84	39K	5%	GRC-319	Note 2
R85	680K			
R86	470K		GRC-228	
R87	100Ω		GRC-226	
R88	470K		GRC-228	
R89	100Ω		GRC-210	
R90	6800Ω	2	GRC-257	
R91	1meg		GRC-274	
R92	2.2meg		GRC-317	
R93	4700Ω		GRC-205	
R94	1.2Ω	2	GRW-564	
R95	150Ω	2	GRC-377	
R96	1800Ω	13	GRW-565	
R97	15000	5% 7	GRW-542	
R98	330K		GRC-301	

Note 2. Not used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ANDREA Part No.	REPLACEMENT DATA
K1	Vert. Integrator	2000mmf, 6000mmf, 8000mmf, 12000, 22000, 22K	FM-5289	Aerovox PA-110 Centralab PC-100 Sprague V1,V3 Cornell-Dubilier 1B7TMS

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA					NOTES
		ANDREA Part No.	Gramer Part No.	Meissner Part No.	Merit Part No.	Miller Part No.	Ram Part No.	
L1	47.25MC Trap	SA-331	20-1049	30-1049				
L2A	1st Video IF	SA-377A						
B	41.25MC Trap	(RS)T52		MCB251				
L3	2nd Video IF	SA-378	17-4523	17-4523	TV-130	6219	VF-3	
L4	3rd Video IF	SA-379	17-4522	17-4522	TV-130	6219	VF-3	
L5	4th Video IF	SA-380	17-5004	17-5004	TV-126	6234		
L6	Resonant Choke	SA-420						12.5uh
L7	Shunt Peaking Coil	SA-382	19-3500	19-3500	TV-204	6144	VP-8	540uh
L8	Series Peaking Coil	SA-384	19-3250	19-3250	TV-198	6130	VP-6	270uh
L9	Series Peaking Coil	SA-384	19-3250	19-3250	TV-198	6130	VP-6	270uh
L10	Shunt Peaking Coil	SA-350	19-3300	19-3300	TV-200	6132	VP-7	330uh
L11	1st Sound IF	SA-421						
L12	Ratio Detector	SA-422	17-3497	17-3497	TV-115	6205	RD-4	

TRANSFORMER (HORIZ. OSC.)

ITEM No	DC RES.		REPLACEMENT DATA						NOTES
	PRI	SEC	ANDREA Part No.	Halldorson Part No.	Merit Part No.	Miller Part No.	Ram Part No.	Thordarson Part No.	
L13	73Ω		SA-335-1						Horiz Freq Tapped @ 52Ω Waveform Coil 47Ω

FILTER CHOKE

ITEM No	RATINGS			REPLACEMENT DATA					
	CURRENT (Maximum)	DC RES	INDUCTANCE @ CURRENT 1000 ~cy	ANDREA Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
L14	300A	45Ω	1.75 Hy.	ST-3107		2EC44	C-2996 ①	F-801 ①	C-3338 ①	2EC44	C-17X ①

① Ch. VR-121(50) & VR-321(50) use 50% transformer.

COILS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA							
		ANDREA Part No.	Halldorson Part No.	Merit Part No.	Miller Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
L15	Width Coil (1.8-10MH)	SA-418	WC-38 ①	MWC-6	6233	20U1X ①	QRC106	WC-8A	WC-33 ①	WLC-5

① Drill new mounting hole.

TRANSFORMER (POWER)

ITEM No	RATING	REPLACEMENT DATA						
		ANDREA Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
	PRI SEC 1 SEC 2							
T1	117V & 1.85A @ 50%	960VCT 5V @ .300A 3A	ST-3105 1	26R92	P-2833		26R92	
	SEC 2 SEC 3							
	12VCT @ 4.7A							

1 Drill new mounting hole

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		ANDREA Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
T2	Vert. Output	ST-3018							A-13X
T3	Yoke-Horiz (19MH) (20°)-Vert (13.5MH) Rear Cover & Centering Device	ST-3096 1 S-146 2 ST-3094	Y-52 3/4		Y-110 3/4		DY-27A3/4	Y-52 3/4	Y-80-2 4 YC-110
T4	Horiz. Output	ST-3095-2	FLY-150*	HVO-81*	X167	EFHT2⑤*	HO-289 *	FLY-150*	D-180

1 Does not include horizontal and vertical yoke damping networks
2 Completely new. Includes horizontal and vertical yoke damping network.
3 Use original rear cover and centering device. Use original yoke damping network, if necessary.
4 Connect same as original
5 Drill new mounting hole(s)

***HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA**

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL (CONNECTION)	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
9	5	9		5	5	5	
8	4	7		4	4	4	
5	3	5		3	3	3	
4	2	3		2	2	2	
3	2	3		2	2	2	
2	1	1		1	1	1	
Connect Width Coil Across	3 & 2	2 & 1	3 & 1	2 & 1	2 & 1	2 & 1	
Special Notes				⑤			

⑤ Remove one turn from filament winding

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI	SEC	ANDREA Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Tr-ind Part No.	
T5	8000Ω	3-4Ω	ST-3104	26949	A-3019	AU-804	A-8092	26549	S-52	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ANDREA PART No.	QUAM PART No.	
SP1	4" x 6"	PM	3-4Ω	SL-4038 ①	46A1	① Models T-VR121, T-VR121(50)
	4" x 6"	PM		SL-4037 ②		② Two used in Models LB-VR121, LB-VR121(50)
	10"	PM	3-4Ω	SL-4024 ③	10A31	③ Used with Ch. VR-321, VR-321(50)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ANDREA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	MDL	1/4A 250V S/B	FM-5542	FM-5543	313.250 (3AG-1/4A-250V-S/B)	357001	MDL 1/4	4408

MISCELLANEOUS

ITEM No.	PART NAME	ANDREA PART No.	NOTES
M2	Tuner	FM-5539	VHF Ch. VR121, VR121(50), VR121-1, VR121-1(50)
	Tuner	FM-5551	VHF Ch. VR321, VR321(50)
M3	Switch		TV-Stereo (DPDT Slide Type)

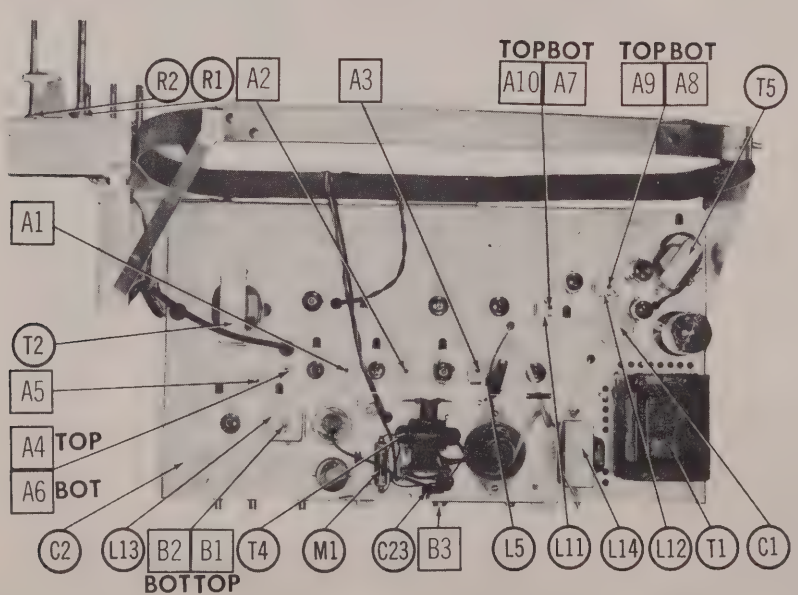
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	FM-5343	
Mask	EP-842A	
Knob	FM-5474G	Channel Selector
Knob	FM-5476	Fine Tuning
Knob	FM-5547G	Volume-Off-On, Contrast
Knob	FM-5478G	Horizontal, Vertical, Brightness, Ch. VR-121
Knob	FM-5550G	Horizontal, Vertical, Brightness, Ch. VR-121-1
Leg	FM-5469	

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor



CHASSIS—TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

FM-5539

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6CY5	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CL8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	ANDREA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	100			HCC-1922	SI 100	D6-101	L10T1	UC-531	5GA-T1	
C202	100			HCC-1922	SI 100	D6-101	L10T1	UC-531	5GA-T1	
C203	15									
C204	5				DI-5	DTZ-4R7	L10V5	CNO-547	5GA-V5	
C205	1000				EF-001	MFT-1000			503C-D1	
C206	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C207	1000				EF-001	MFT-1000			503C-D1	
C208	10		NPO 5%			TCZ-10	C10Q1C	ZT-541	5TCC-Q1S 5% *	
C209	1.5				NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15	
C210	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C211	2.0				NPO-SI 2		C10V2C			
C212	.24		10%							
C213	1.5		10%		NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15S 10%*	
C214	.91		10%							
C215	47				BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C216	15				BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C217	.39		10%							
C218	100									
C219	1.5									
C220	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C221	33									
C222	1000				EF-001	MFT-1000			503C-D1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ANDREA PART No.	NOTES
	OHMS	WATT		
R201	560K		GRC-305	
R202	560K		GRC-305	
R203	12K			
R204	18K			
R205	22K			

ITEM No.	RATING		ANDREA PART No.	NOTES
	OHMS	WATT		
R206	15K			
R207	4700Ω			
R208	4700Ω			
R209	220K			
R210	2200Ω			

TUNER ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT FOR TUNER FM-5539

Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
Set the Fine Tuning to the center of its range. One slug for high band adjustment is located at 10 o'clock, and should be adjusted first. The low band adjustment is located at 4 o'clock. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

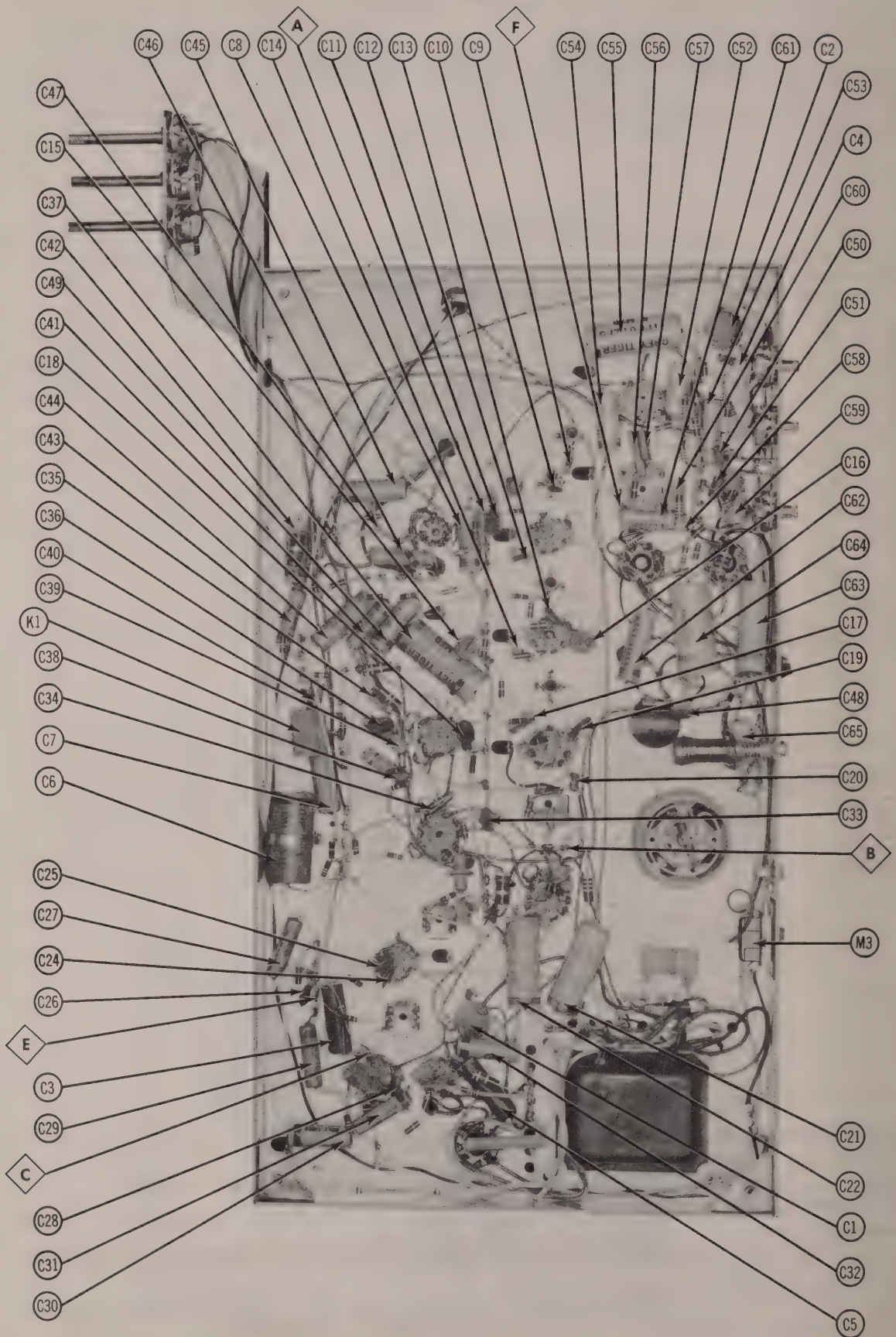
This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

VHF OSCILLATOR ALIGNMENT FOR TUNER FM-5551

The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted and adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



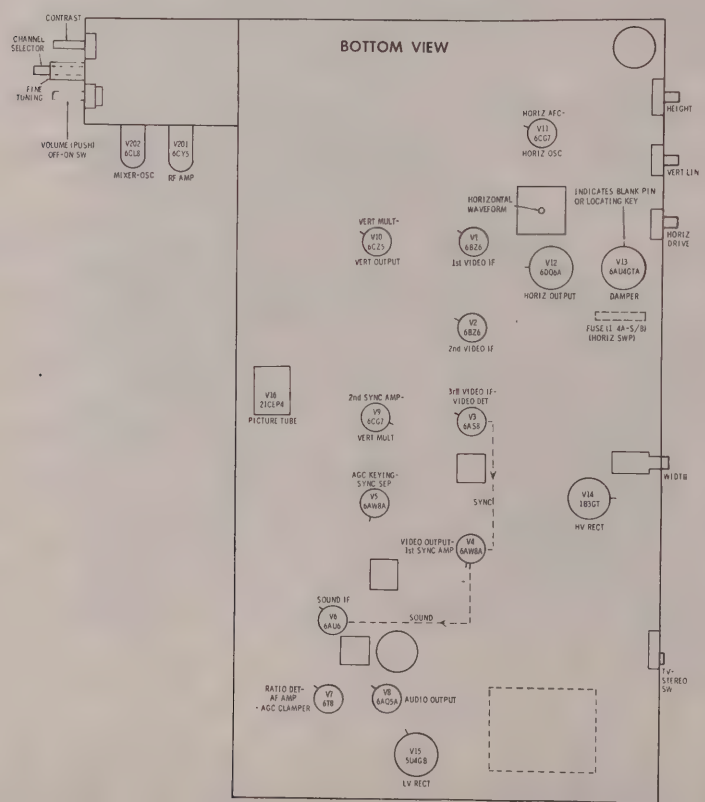
CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

RESISTANCE MEASUREMENTS

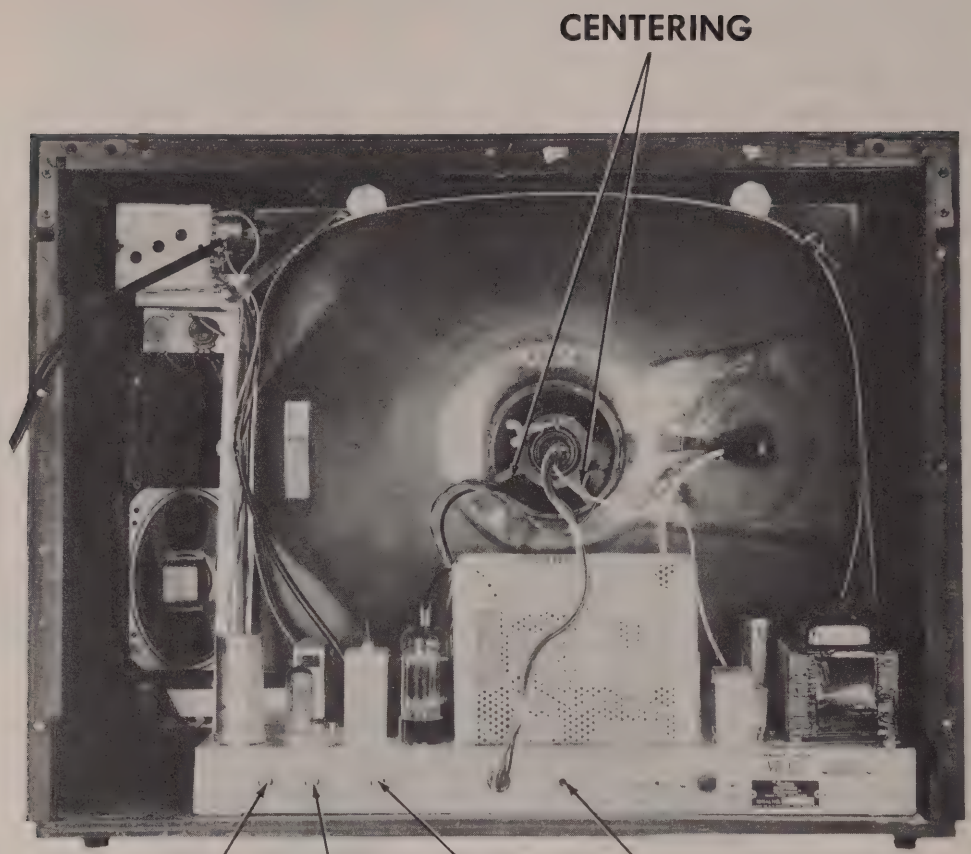
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	68Ω	0Ω	.1Ω	†2800Ω	†2800Ω	0Ω		
V2	6BZ6	150K	47Ω	0Ω	.1Ω	†2800Ω	†2800Ω	0Ω		
V3	6AS8	†3800Ω	.1Ω	220Ω	0Ω	.1Ω	4700Ω	220Ω	.1Ω	†3800Ω
V4	6AW8A	0Ω	10K	†8600Ω	0Ω	.1Ω	● 20Ω	4700Ω	†33K	†4700Ω
V5	6AW8A	0Ω	2.6meg	†150K	0Ω	.1Ω	†1800Ω	†8600Ω	†0Ω	250K
V6	6AU6	1.7Ω	0Ω	0Ω	.1Ω	†2800Ω	†2800Ω	82Ω		
V7	6T8	520K	47K	520K	.1Ω	0Ω	300K	0Ω	4.7meg	†430K
V8	6AQ5A	470K	390Ω	0Ω	.1Ω	†1800Ω	†1500Ω	470K		
V9	6CG7	● †600K	● 1.7meg	0Ω	.1Ω	0Ω	†13K	†150K	10K	NC
V10	6CZ5	†330Ω	TP	● 1.5meg	.1Ω	0Ω	● 1.5meg	0Ω	NC	†650Ω
V11	6CG7	● †22K	1.2meg	150K	.1Ω	0Ω	● †50K	220K	0Ω	NC
V12	6DQ6A	TP	0Ω	TP	†7800Ω	470K	TP	.1Ω	0Ω	TOP CAP †12Ω
V13	6AU4GTA	TP	NC	¶300K	NC	†0Ω	TP	.1Ω	0Ω	
V14	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †340Ω
V15	5U4GB	TP	¶	NC	21Ω	NC	20Ω	NC	¶	
V16	21CEP4	0Ω	12K	†100K	†0Ω	NC	NC	●250K	.1Ω	
V201	6CY5	340K	0Ω	.1Ω	0Ω	†1800Ω	†17K	0Ω		
V202	6CL8	15K	†6500Ω	0Ω	0Ω	.1Ω	†4000Ω	†1800Ω	0Ω	225K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 250V SOURCE.
† MEASURED FROM PIN 3 OF V13.

NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Suggested Alignment Tools:
GENERAL CEMENT #8271, 8273, 8275, 8276, 8721, 8722, 9150, 9298, 5003
WALSCO #2516, 2519

Turn the set on and tune in a TV station, preferably with a test pattern.

Adjust for normal picture and sound. Set the Horizontal Hold at the center of its range.

Adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally.

Connect the vertical amplifier of a scope thru a 10mmf capacitor to point (F). Low side to chassis.

Adjust the horizontal Waveform slug (B2) for waveform similar to Fig. 2 with the broad and narrow peaks of equal amplitudes. While making this adjustment, keep picture synchronized horizontally with B1.

Adjust Horizontal Drive control until a vertical white line appears in the picture, then back off until the line just disappears.

Adjust the Width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

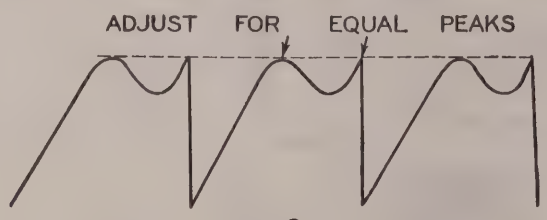


FIG. 2

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL C3004E (Ch. 16C22Q)

ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 449 FOLDER 2

PHOTOFACT* Folder

ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

FOR DISASSEMBLY INSTRUCTIONS
SEE BACK PAGE

MODEL C3004E (Ch. 16C22Q)

TRADE NAME	Zenith	MODELS	CHASSIS
		C2221R, Y, C2223E, R, Y, C2225E, R, Y, C2245E, R, W, C2246E, R, W, C2247E, R, W, C2249H, R, W, C2254E, H, R, W, C2284H, R	16C21
		C3001E, R, W, C3006E, R, W, C3007E, R, W, C3008R, C3009E, W, Y	16C21Q
		C2221RU, YU, C2223EU, RU, YU, C2225EU, RU, YU, C2245EU, RU, WU, C2246EU, RU, WU, C2247EU, RU, WU, C2249HU, RU, WU, C2254EU, HU, RU, WU, C2284HU, RU	16C21U
		B2221RZ, YZ, B2223EZ, RZ, YZ, B2245EZ1, RZ1, WZ1	16C21Z
		C3000E, R, C3004E, R, W	16C22Q
		C2282E, R, W	16C23
		C2282EU, RU, WU	16C23U
		C2673E, R, W	16C24
		C2673EU, RU, WU	16C24U
		C2282E, EU, R, RU, W, WU (Stereo Amplifier)	5B26
		C2284H, HU, R, RU (Stereo Amplifier)	5B28
		C3000E, R, C3004E, R, W (Remote Control)	S-45832
		C3001E, R, W, C3006E, R, W, C3007E, R, W, C3008R, C3009E, W, Y (Remote Control)	S-45834

MANUFACTURER	Zenith Radio Corp., 6001 Dickens Avenue, Chicago 39, Illinois
TYPE SET	Television Receiver With Remote Control
TUBES	TV: VHF-Sixteen, UHF-Seventeen, Remote Control: Five or Eight
POWER SUPPLY	110-120 Volts, 60 Cycle AC RATING TV: 220 Watts, 2 Amp. @ 117 Volts AC While Tuning 250 Watts, 2.4 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove trim at lower left corner of safety glass. Remove 2 metal screws holding glass retainer. Tilt glass out at bottom and lower to remove.

FUSE

One fuse is used for low voltage power supply protection. (For location, see "Tube Placement Chart".) NOTE: Models equipped with Remote Control S-45834 have one fuse to protect remote power supply.

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, it is necessary to remove the chassis. (See "Disassembly Instructions".)

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus control. (For location, see "Tube Placement Chart".)

SYNC STABILITY

Sync stability may be varied by means of a Fringe Lock control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Oscillator coil is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by adjusting a metallic sleeve, located between the yoke and the picture tube neck, in or out of the yoke.

BUZZ

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

PINCUSHION ADJUSTMENT

Reduce the picture size so that the sides of the raster are visible. Position 2 magnets so that all sides are straight.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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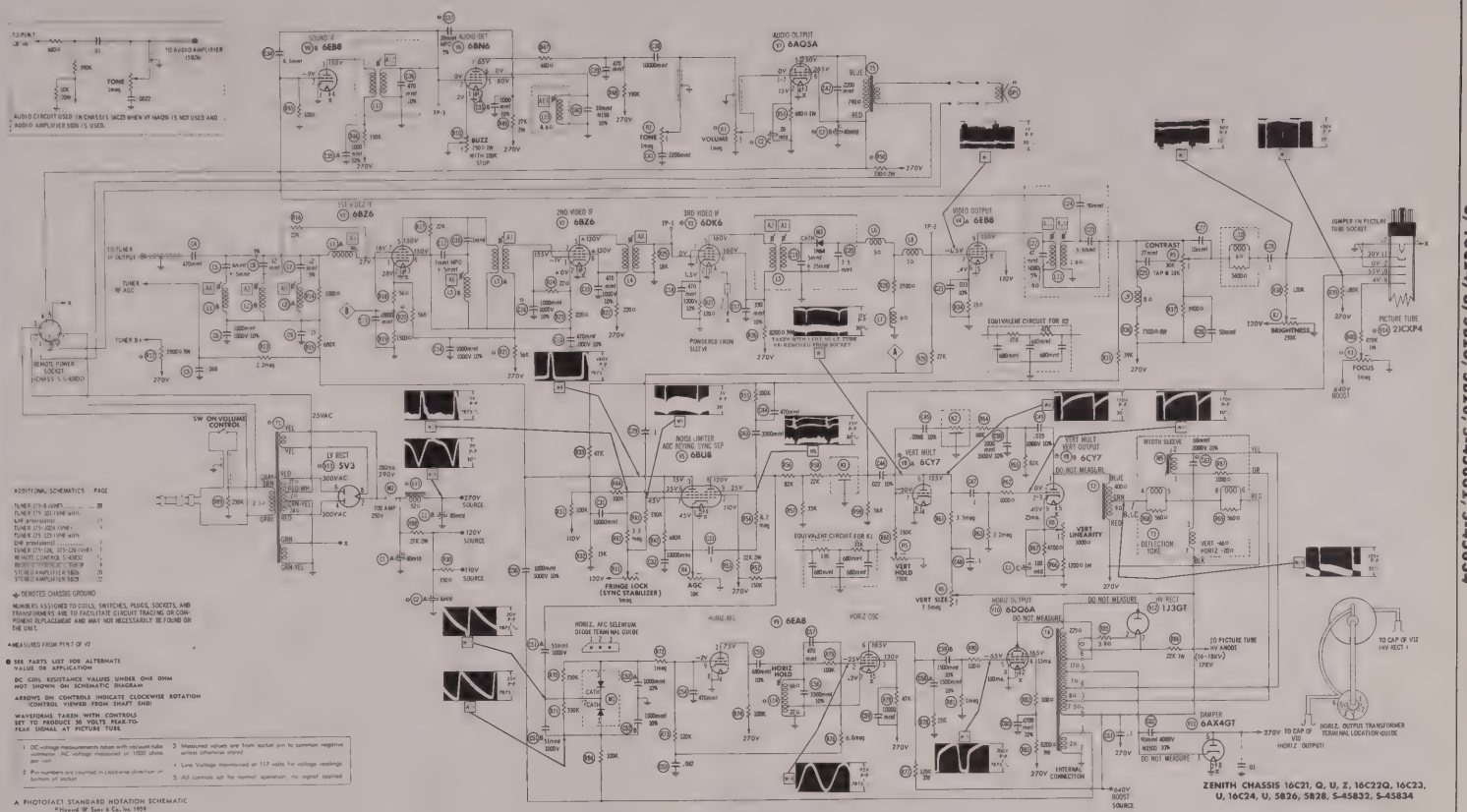
SET 449 FOLDER 2


ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834
ADDITIONAL SCHEMATICS PAGE
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
MEASURED FROM PIN 7 OF V7
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum-tube voltmeter. AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket.
3 Measured values are from socket pin to common negative unless otherwise stated.
4 Line Voltage maintained at 117 volts for voltage readings.
5 All controls set for normal operation, no signal applied.
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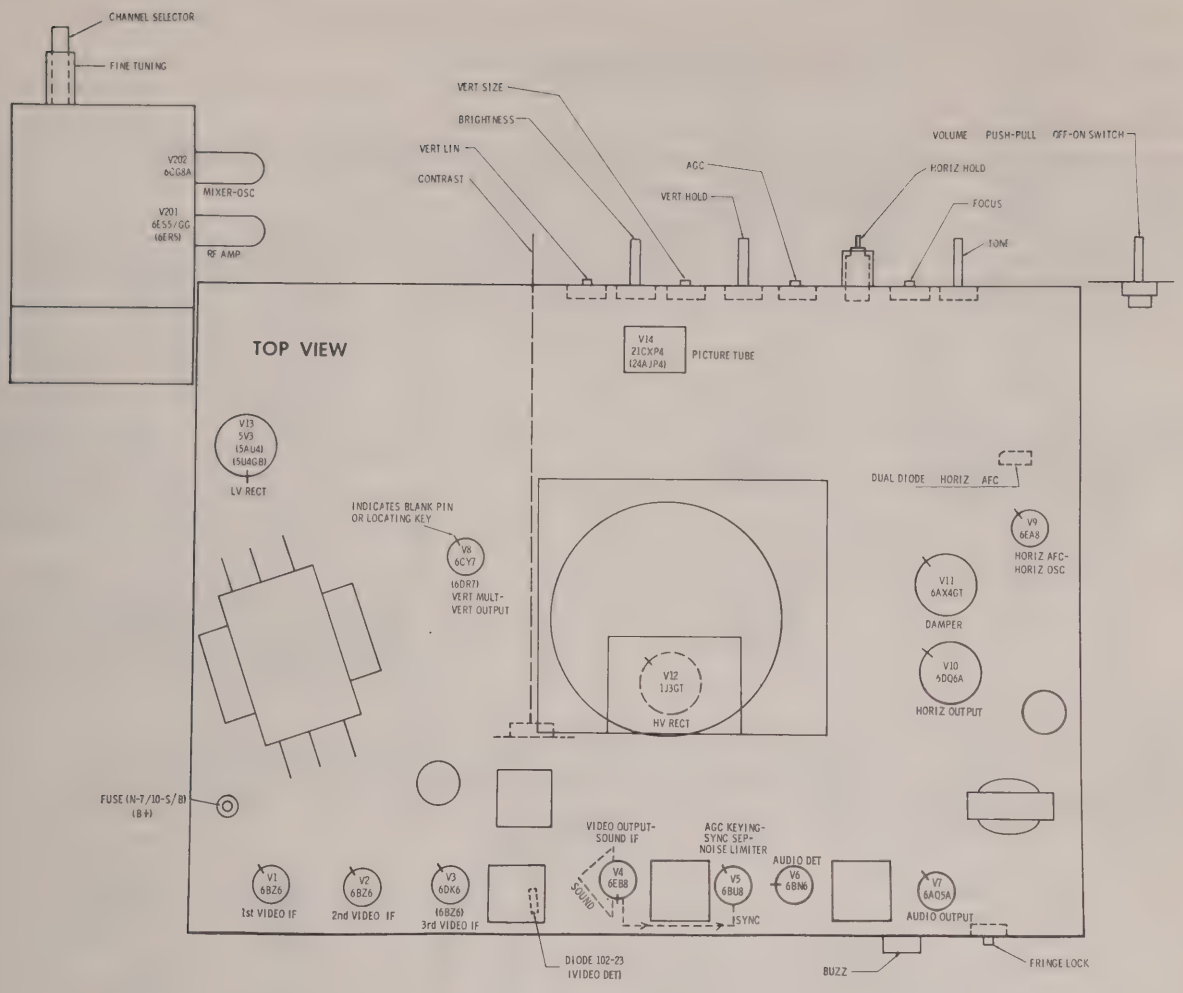
ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (7/10A), V13

SWEEP FAILURE
No raster, has sound Rect. (Horiz. AFC), V9, V10, V11, V12, V13, V14
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, V13
Vert. off freq. V8
Horiz. off freq. V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5, Rect. (Horiz. AFC)
No vert. or horiz. sync V5

ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: A1 thru A13.... General Cement #8606, 8606L, 8682, 9295
Walsco #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	470mmf	High side to TP1. Low side to chassis. Connect a 56Ω carbon resistor across sweep output.	44MC (10MC Swp)	39.75MC 41.25MC 45.75MC	Between any two channels	Vert. Amp. thru 10K to TP2. Low side to chassis. (Across Video Det. load)	A1, A2	Set sweep generator output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry with the 45.75MC marker positioned as shown in Fig. 1. The 39.75MC marker can fall within ±.5MC of the specified frequency. If the desired response cannot be obtained, check to see that the cores are entering their respective windings from opposite ends of the coils.
2.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5, A6	Connect a clip lead from point Ⓐ to chassis. Connect a clip lead from TP3 to point Ⓑ. Use high scope again and adjust A3 thru A6 for MINIMUM marker amplitudes as in Fig. 2. A3 controls the 39.75MC marker, A4 controls the 41.25MC marker and A5 and A6 control the 47.25MC marker.
3.	"	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A7, A8, A9, & Mixer Plate Coil	Remove clip lead from point Ⓑ and connect to chassis. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A7 affects low side of curve and A8 affects the high side. Remove clip leads.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and the receiver antenna terminals. Tune in a TV station and adjust the attenuator until the signal is below the limiting level of the 6BN6 as evidenced by a hiss similar to super-regeneration in the sound. Adjust A10, A11, A12 and A13 for maximum sound and best quality. Adjust the Buzz control (R10) for MINIMUM buzz. If the hiss disappears during alignment, further reduce the signal until the hiss returns.

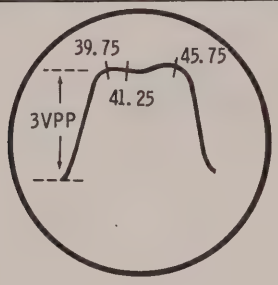


FIG. 1

FIG. 2

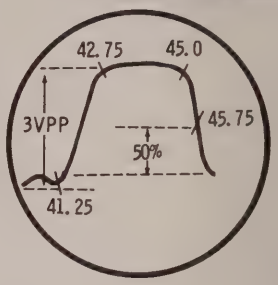
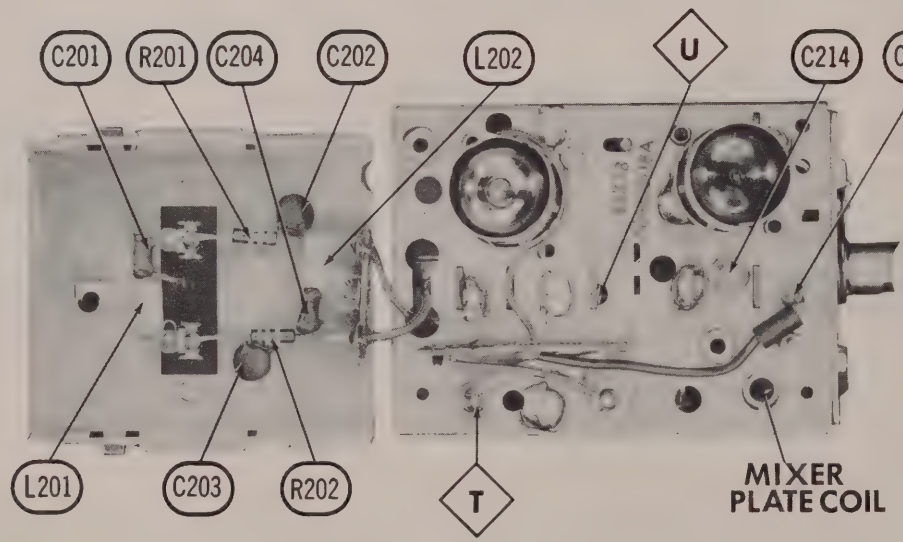
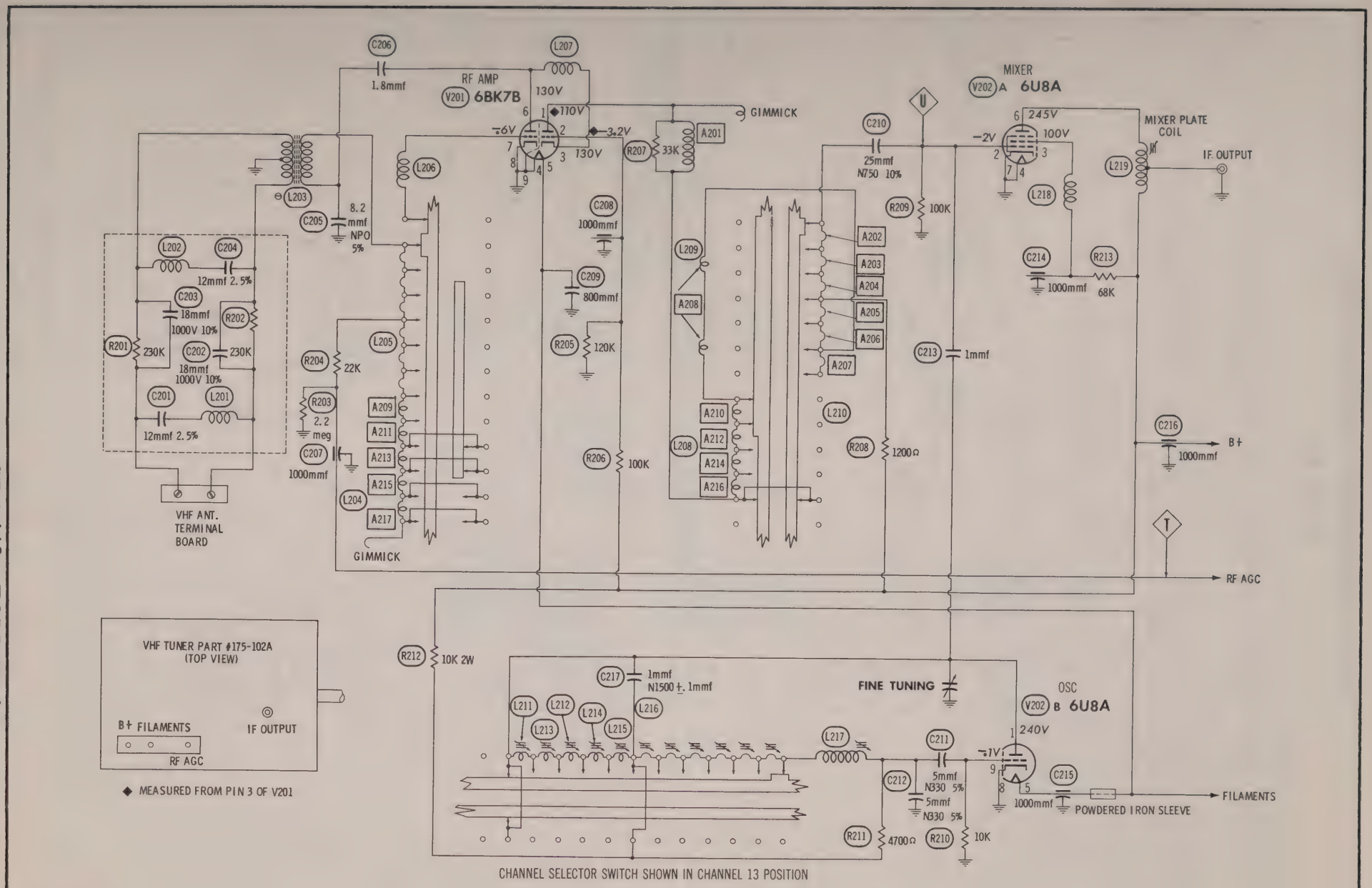


FIG. 3



TUNER 175-102A TOP VIEW



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VHF TUNER 175-102A

ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

TUNER ALIGNMENT INSTRUCTIONS

175-101, 102A

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

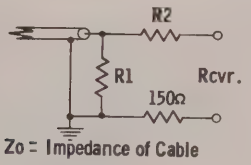
VHF OSCILLATOR ALIGNMENT

Set the Fine Tuning to the center of its range by turning the Fine Tuning shaft until the small index hole in the drive cam is directly over the small hole just below the channel 13 oscillator adjustment screw. Starting with the highest channel operating in the area, adjust the appropriate oscillator adjustment screw for best picture and sound for each channel available.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usuable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. amp. thru 10K to point (U). Low side to chassis.	A201	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown.
2.	"	"	207MC	205.25MC 209.75MC	12	"	A202	"
3.	"	"	201MC	199.25MC 203.75MC	11	"	A203	"
4.	"	"	195MC	193.25MC 197.75MC	10	"	A204	"
5.	"	"	189MC	187.25MC 191.75MC	9	"	A205	"
6.	"	"	183MC	181.25MC 185.75MC	8	"	A206	"
7.	"	"	177MC	175.25MC 179.75MC	7	"	A207	"
8.	"	"	85MC	83.25MC 87.75MC	6	"	A208, A209	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. Adjust first coil for proper marker position and second coil for maximum gain and symmetry.
9.	"	"	79MC	77.25MC 81.75MC	5	"	A210, A211	"
10.	"	"	69MC	67.25MC 71.75MC	4	"	A212, A213	"
11.	"	"	63MC	61.25MC 65.75MC	3	"	A214, A215	"
12.	"	"	57MC	55.25MC 59.75MC	2	"	A216, A217	"



Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

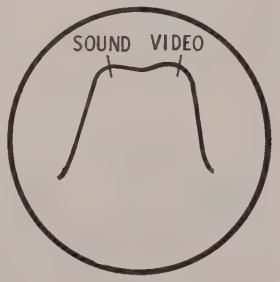
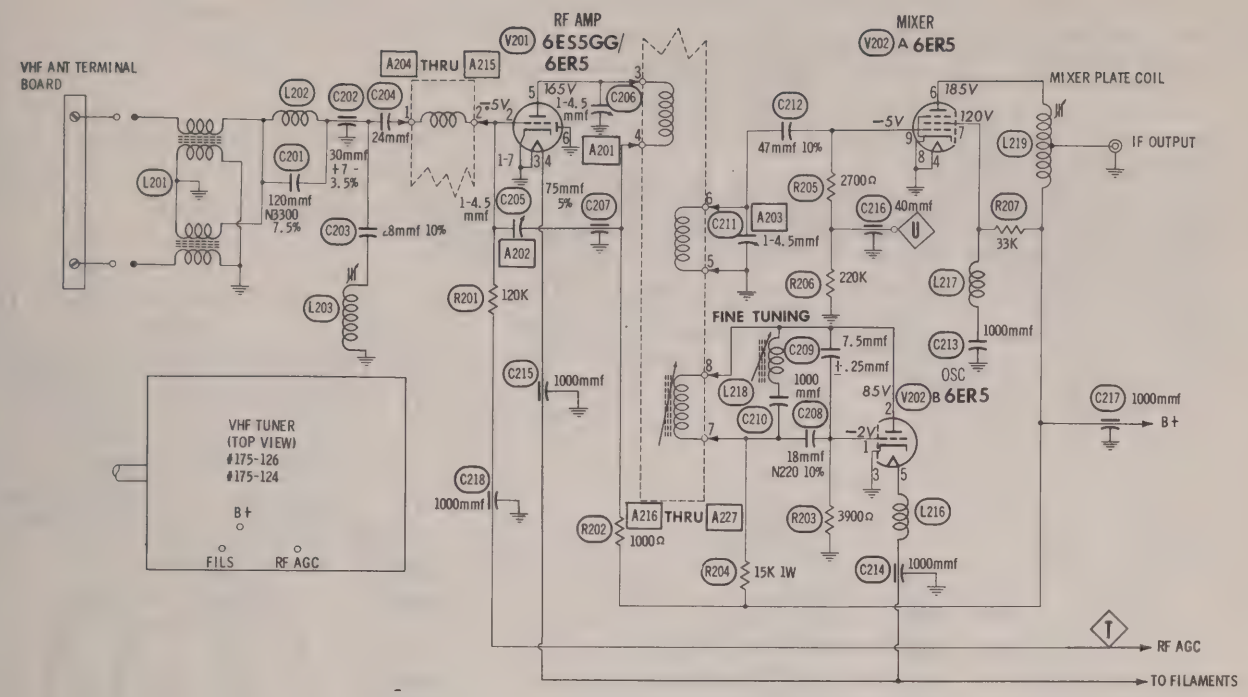


FIG. 202



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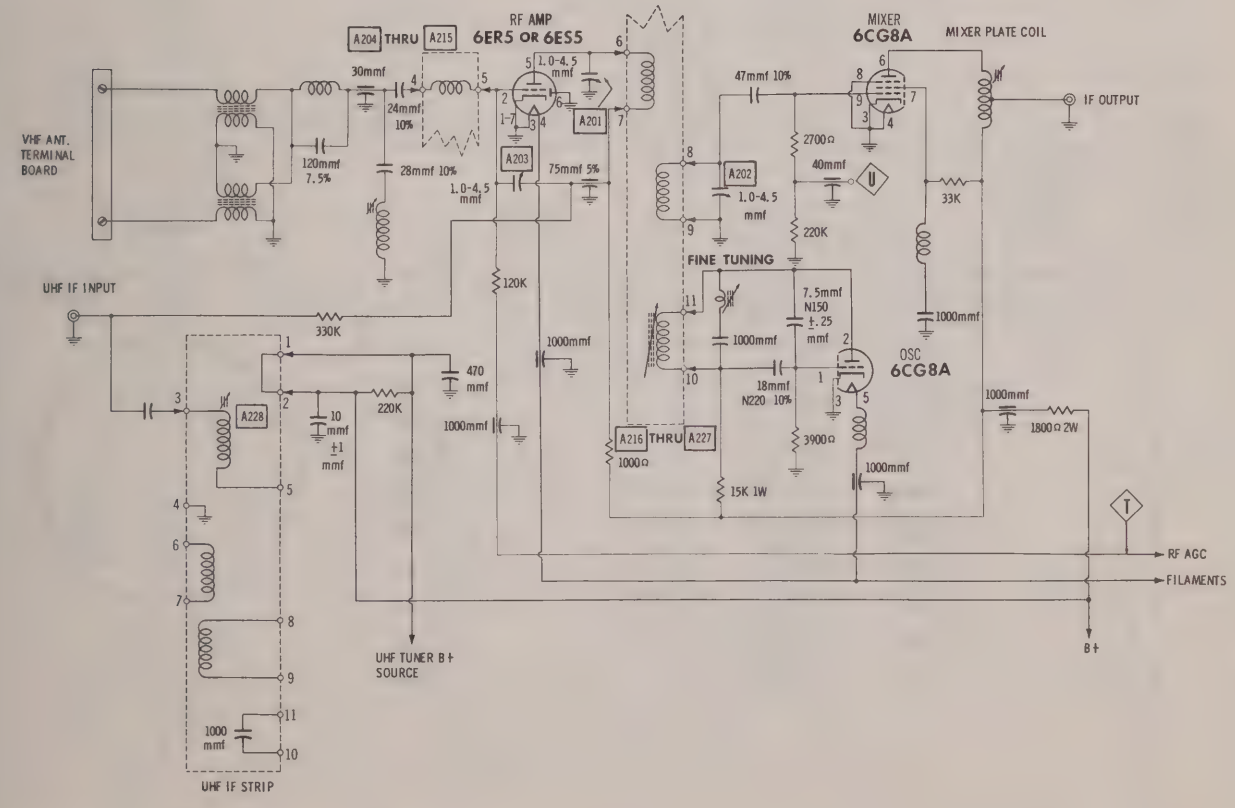
VHF TUNER 175-124, 126



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VHF TUNER with UHF Provisions 175-123

TUNER ALIGNMENT INSTRUCTIONS

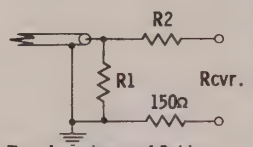
PRE-ALIGNMENT INSTRUCTIONS FOR TUNERS #175-123, 175-124, 175-126

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A203 ... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A216 thru A227 ... GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching transformer (Fig. 201).	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	



Zo = Impedance of Cable

Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

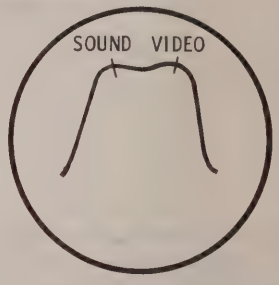


FIG. 202

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Fig. 201	Across antenna terminals thru matching transformer (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Detector load.	A216	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

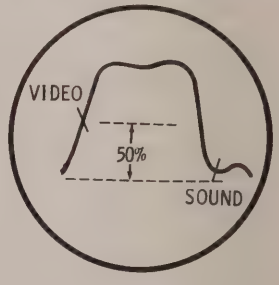
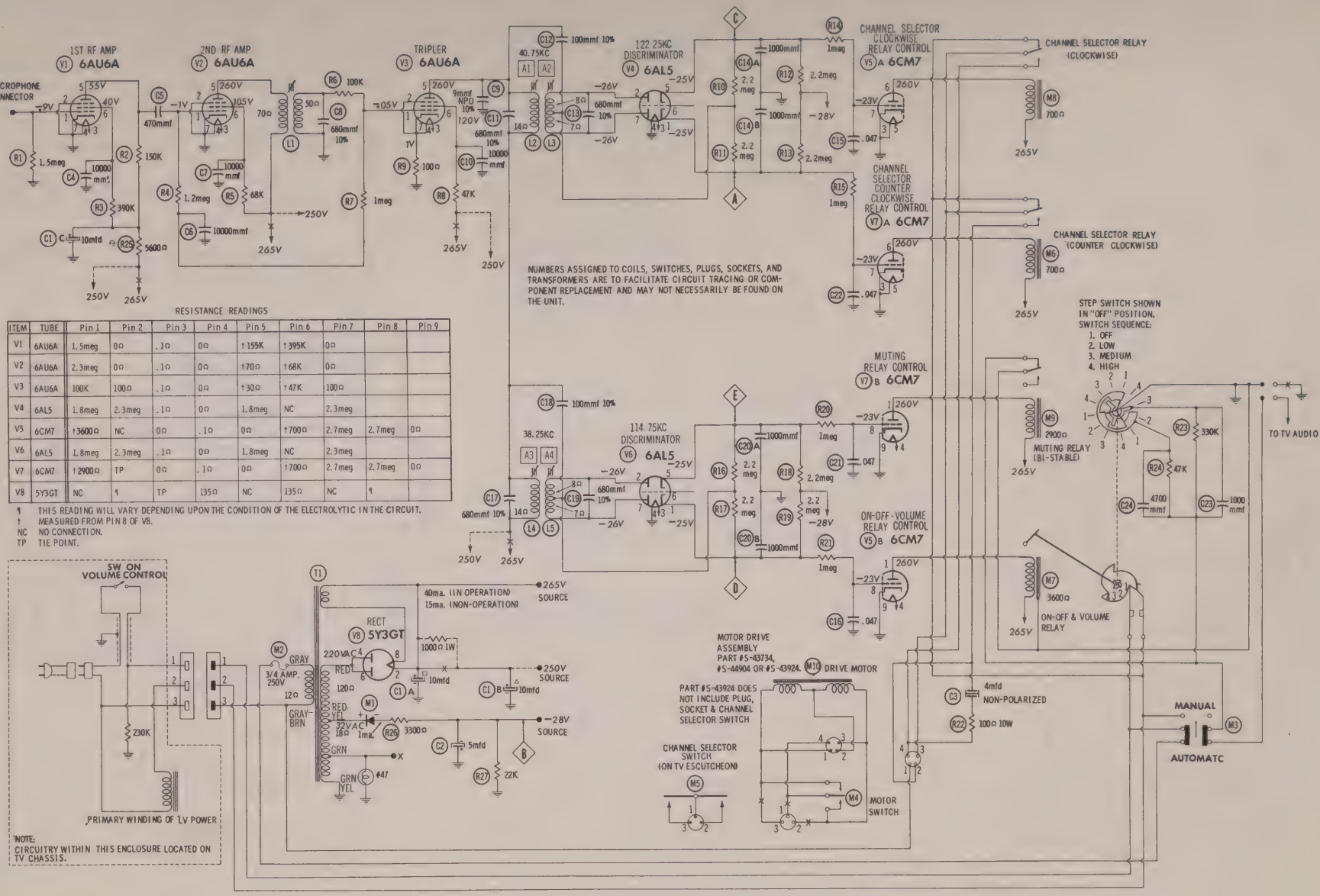


FIG. 203



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6A	1.5meg	0Ω	.1Ω	0Ω	†155K	†395K	0Ω		
V2	6AU6A	2.3meg	0Ω	.1Ω	0Ω	†70Ω	†68K	0Ω		
V3	6AU6A	100K	100Ω	.1Ω	0Ω	†30Ω	†47K	100Ω		
V4	6AL5	1.8meg	2.3meg	.1Ω	0Ω	1.8meg	NC	2.3meg		
V5	6CM7	†3600Ω	NC	0Ω	.1Ω	0Ω	†700Ω	2.7meg	2.7meg	0Ω
V6	6AL5	1.8meg	2.3meg	.1Ω	0Ω	1.8meg	NC	2.3meg		
V7	6CM7	†2900Ω	TP	0Ω	.1Ω	0Ω	†700Ω	2.7meg	2.7meg	0Ω
V8	5Y3GT	NC	¶	TP	135Ω	NC	135Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V8.
NC NO CONNECTION.
TP TIE POINT.

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REMOTE CONTROL S-45834

ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, 5-45832, 5-45834

REMOTE CONTROL S-45834
PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st RF Amp.	6AU6A	
V2	2nd RF Amp.	6AU6A	
V3	Tripler	6AU6A	
V4	122.25KC Discriminator	6AL5	
V5	On-Off-Volume Relay Control-Channel Selector (CW) Relay Control	6CM7	

ITEM No.	USE	TYPE	NOTES
V6	114.75KC Discriminator	6AL5	
V7	Muting Relay Control-Channel Selector (CCW) Relay Control	6CM7	
V8	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	10	350	22-3074	AFH3-27	C0210	FP330.5	TMT-27	TVL-3690	
B	10	350							
C	10	350							
C2	5	50	22-2941	PRS50V5	BBR5-50	TT50X5	TD-5-50	TVA-1303	
C3	4	200NP	22-2893	NP-PRS450V4	BR845 † BR845 †	TC50X † TC50X †		TVAS-1436 *	

† Connect negative leads together.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	10000			22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C5	470			22-6	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C6	10000			22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	10000			22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C8	680		10%	22-2901	1469-00068	D6-681	1R5T68		MS-368	
C9	9		NPO 10%	22-3131						
C10	10000			22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C11	680		10%	22-2901	1469-00068	D6-681	1R5T68		MS-368	
C12	100		10%	22-1442	1469-0001	DD-101	22R5T1	MCB235	MS-31	
C13	680		10%	22-2901	1469-00068	D6-681	1R5T68		MS-368	
C14A	1000			22-21	BPD-2X001	DD2-102	BYC6DD1	B-210	5HK-2D1	
B	1000							B-210		
C15	.047	200		22-1778	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C16	.047	200		22-1778	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C17	680		10%	22-2901	1469-00068	D6-681	1R5T68		MS-368	
C18	100		10%	22-1442	1469-0001	DD-101	22R5T1	MCB235	MS-31	
C19	680		10%	22-2901	1469-00068	D6-681	1R5T68		MS-368	
C20A	1000			22-21	BPD-2X001	DD2-102	BYC6DD1	B-210	5HK-2D1	
B	1000							B-210		
C21	.047	200		22-1778	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C22	.047	200		22-1778	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C23	1000			22-17	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C24	4700			22-14	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

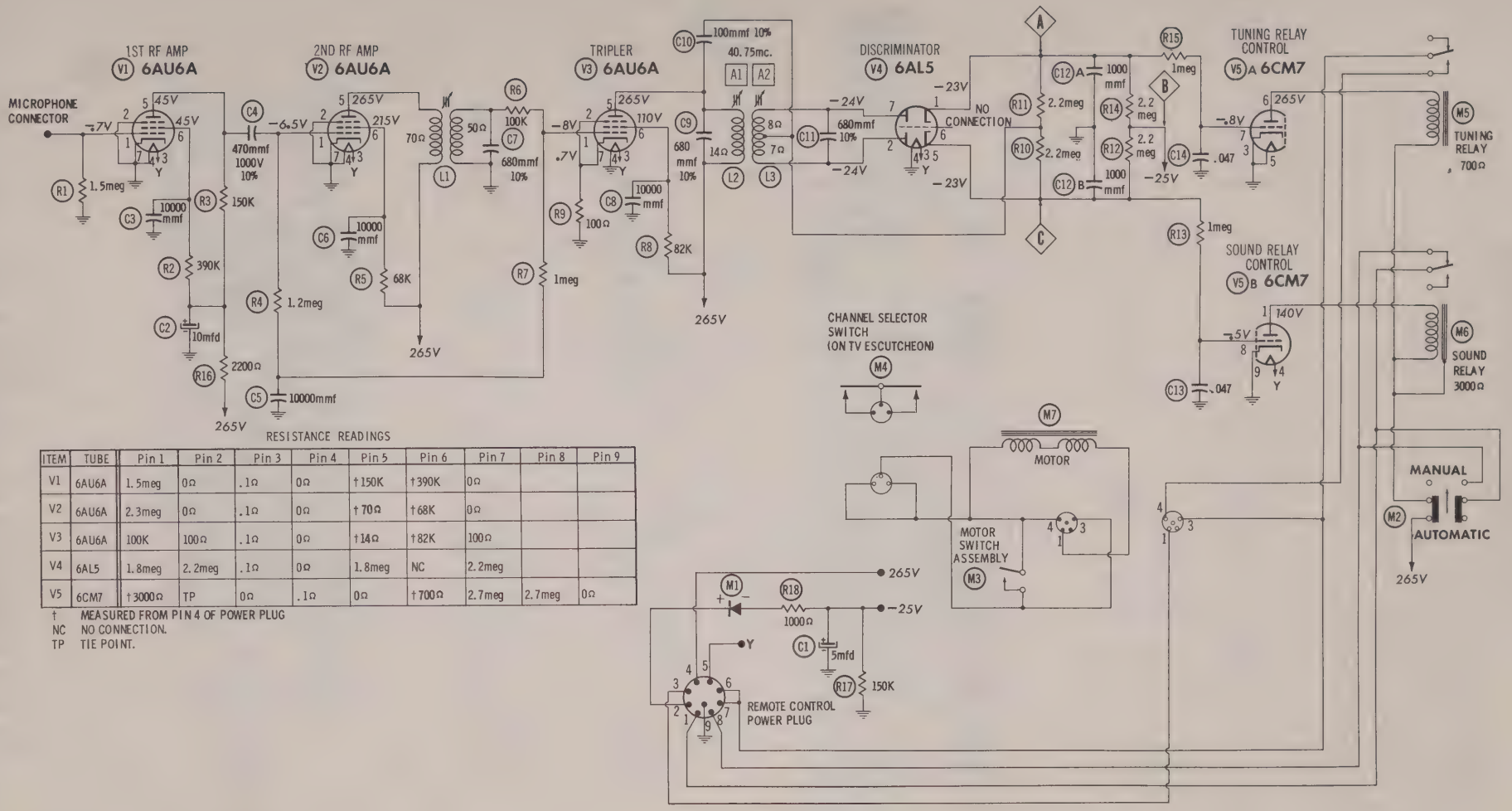
ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R1	1.5meg		63-1919	
R2	150K		63-1876	
R3	390K		63-1894	
R4	1.2meg		63-1915	
R5	68K		63-1862	
R6	100K		63-1870	
R7	1meg		63-1912	
R8	47K		63-1855	
R9	100Ω		63-1744	
R10	2.2meg		63-1925	
R11	2.2meg		63-1925	
R12	2.2meg		63-1925	
R13	2.2meg		63-1925	
R14	1meg		63-1912	

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R15	1meg		63-1912	
R16	2.2meg		63-1925	
R17	2.2meg		63-1925	
R18	2.2meg		63-1925	
R19	2.2meg		63-1925	
R20	1meg		63-1912	
R21	1meg		63-1912	
R22	100Ω	10	63-3667	
R23	330K		63-1890	
R24	47K		63-1855	
R25	5600Ω			Note 1
R26	3300Ω		63-1806	
R27	22K		63-1841	

Note 1. Some versions may use a 2200Ω in this application (Part #63-1800).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ZENITH PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	39.5KC Trans.	S-43725						
L2	Discriminator	S-24788						
L3	Discriminator	S-24789						
L4	Discriminator	S-24789						Tapped @ 7Ω
L5	Discriminator	S-24789						Tapped @ 7Ω



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6A	1.5meg	0Ω	.1Ω	0Ω	†150K	†390K	0Ω		
V2	6AU6A	2.3meg	0Ω	.1Ω	0Ω	†70Ω	†68K	0Ω		
V3	6AU6A	100K	100Ω	.1Ω	0Ω	†14Ω	†82K	100Ω		
V4	6AL5	1.8meg	2.2meg	.1Ω	0Ω	1.8meg	NC	2.2meg		
V5	6CM7	†3000Ω	TP	0Ω	.1Ω	0Ω	†700Ω	2.7meg	2.7meg	0Ω

† MEASURED FROM PIN 4 OF POWER PLUG
NC NO CONNECTION.
TP TIE POINT.

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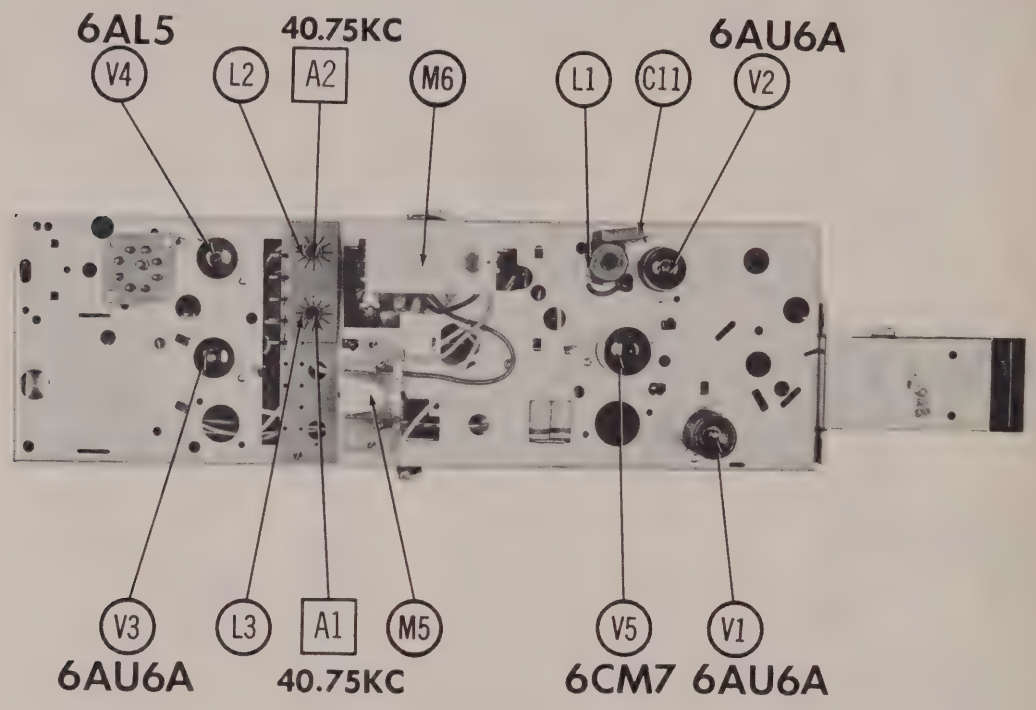
REMOTE CONTROL S-45832

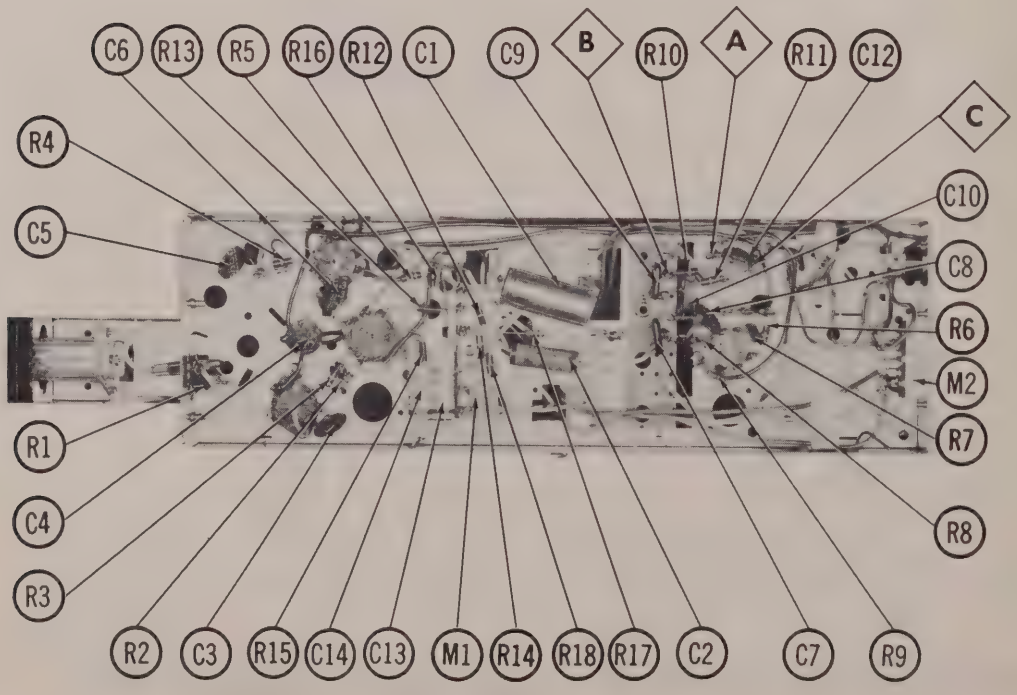
ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

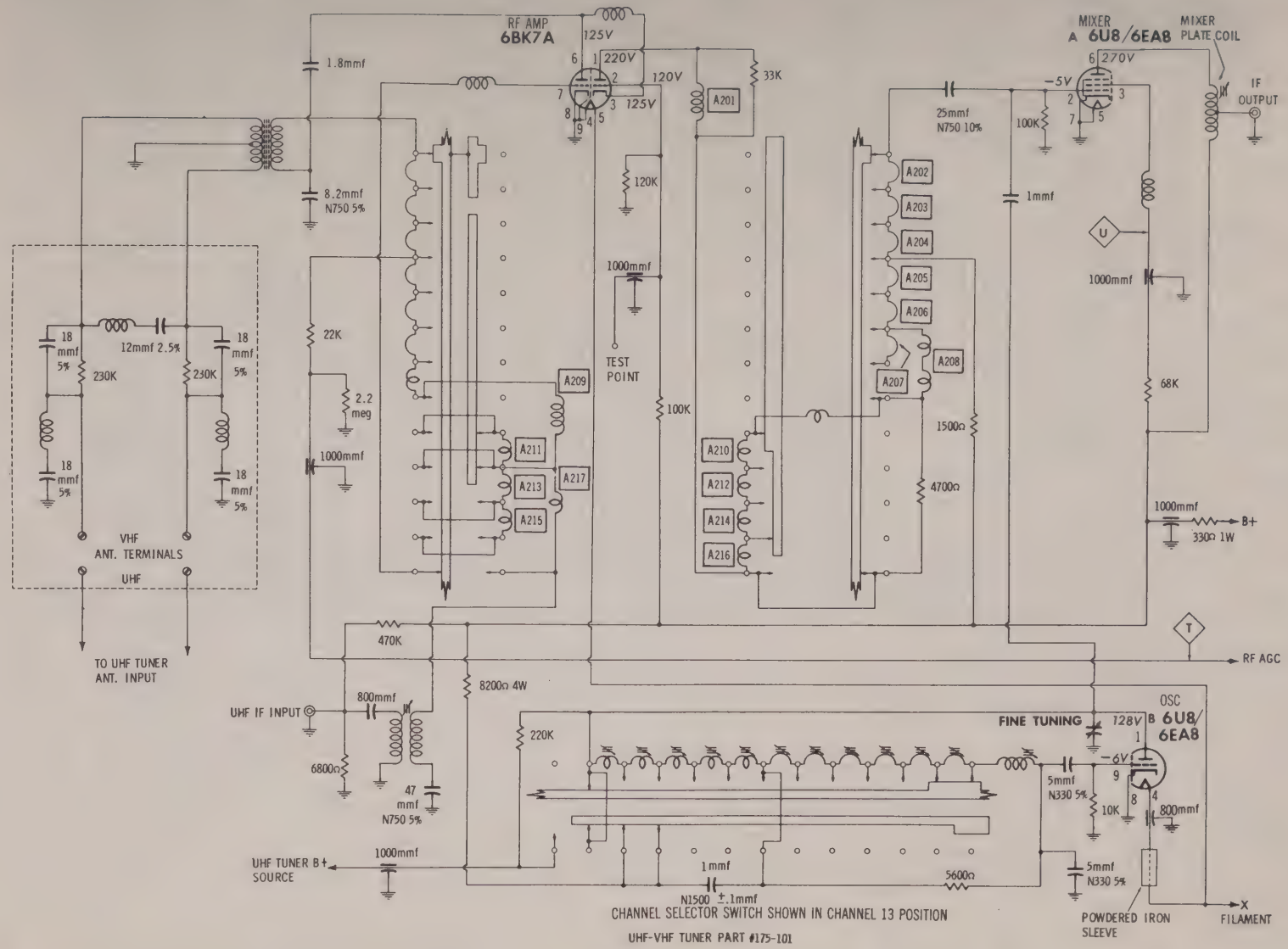
REMOTE CONTROL S-45832
ALIGNMENT INSTRUCTIONS

Remove the Relay Control tube from its socket.
Set switch to orange dot on chassis stamped with orange cross. Set to other position for unmarked chassis.
Use only enough generator output to provide a usable indication on VTVM.
Suggested Alignment tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of 1st RF Amp. Low side to chassis.	40.75KC (Unmod)		DC probe thru 1meg to point (A). Common to point (B).	A1	Adjust for maximum deflection.
2.	"	"	"		DC probe thru 1meg to point (A). Common to point (C).	A2	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
3.	Use transmitter used with unit as signal source. Place approximately 4 inches in front of microphone and repeatedly depress corresponding key to provide the signal. Connect the negative lead of the VTVM to point (B). While depressing transmitter keep checking voltages at points (A) and (C). If more than 25% difference, retouch A2 SLIGHTLY to bring within tolerance.						







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VHF TUNER with UHF Provisions 175-101

ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

ZENITH CHASSIS 16C21, Q, U, Z, 16C22Q, 16C23, U, 16C24, U, 5B26, 5B28, S-45832, S-45834

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st Video IF Amp	6BZ6	
V2	2nd Video IF Amp	6BZ6	
V3	3rd Video IF Amp	6DK6	6BZ6 *
V4	Video Output Sound IF	6FB6	
V5	AGC Keying Noise Limiter-Sync Sep.	6BU8	
V6	Audio Det	6BN6	
V7	Audio Output	6AQ5A	
V8	Vert Mult -Vert Output	6CY7	6KH7*
V9	Horiz. AFC-Horiz Osc.	6EA8	
V10	Horiz Output	6DQ6A	
V11	Damper	6AX4GT	
V12	HV Rect	1J3GT	
V13	LV Rect	5V3	Note 1

Note 1. Ch. 16C3BQ uses 5V3 or 5AU4. Ch. 16C2L, Q, U, Z, 16C23, 16C24 use 5U4GB. * Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	ZENITH PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V14	21CX24 24AJP4		21CXP4 ①	21CXP4 ② 24AJP4 ②	① "Aluminized" ② "Silver Screen 66"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	VOLT	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	TYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	⊕40	400	22-3137	AFH4-100-40	BD732	FP333 ②	TMD-99	TVL-4563 ④	Note 1
B	⊕80	400			BR4045		TU-80-450		
C	⊕100	50							
C2A	⊕4	350	22-3144	AFH2-89	HO650		TMD-74	TVL-2704	
B	⊕40	400		PHR350V4	BH435		TU-4-450	TVA-1601	
C	20	25							

Note 1. An alternate 3 section (30mfd ⊕ 400V, 4mfd ⊕ 350V, 20mfd ⊕ 25V, Part #22-3744) may be used in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	VOLT	TOL	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.068	200		22-3572	PX38N-068		CUA068	GEM-4168	47TM-068	
C4	470			22-18	BPD-00047	DD-471	BYA10T47	B-347	47TM-P1	
C5	4		s. 5mmf	22-3549			C10V4C		5TCCB-V4S ± .5mmf *	
C6	1000	1000	10%	22-17				JL-1G	SGA-D1K 10% *	
C7	18		5%	22-3035		TCZ-1S	C10QL1C	CNO-413	SGA-Q1S 5% *	
C8	18		5%	22-3035		TCZ-1S	C10QL1C	CNO-413	SGA-Q1S 5% *	
C9	.18	200		22-3547	P38SN-15		CUB2P15	GEM-3015	47M-P15	
C10	1.0			22-1762	NPO-SI 1	TCZ-1		CNO-S10	5TCCB-V1	
C11	10000			22-3	BPD-01	DD-103	BYA10S	B-S10	5HK-S1	
C12	7		NPO s. 5mmf	22-3513						
C13	470	1000	10%	22-5		MD-47L		JL-347	SGA-T47S 10% *	
C14	1000	1000	10%	22-17				JL-1G	SGA-D1K 10% *	
C15	470	1000	10%	22-5		MD-47L		JL-347	SGA-T47S 10% *	
C16	1000	1000	10%	22-17				JL-1G	SGA-D1K 10% *	①
C17	330		10%	22-3266	1469-00033	DR-331	LJQT33	MJ-333	SGA-T47S 10% *	
C18	470	1000	10%	22-5		MD-47L		JL-347	SGA-T47S 10% *	
C19	5		s. 25mmf	22-2990					SGA-V5 s. 25mmf *	
C20	7.6			22-3743		DD-7R5	L10VT	DM-M053	5TCCB-V7S	
C21	.033	200	10%	22-3510	V84C3S33		C10QL3	CNO-S33	47M-S33	
C22	47		MOSO 5%	22-3467						
C23	3.3			22-3343	NPO-SI 3.3	TCZ-3R3	L10V33C	CNO-S33	5TCCB-V33	
C24	50			22-3460	NPO-SI 50	TCZ-50	L10Q5	CNO-S50	5GA-Q5	
C25	27			22-3026	NPO-SI 27	TCZ-27	L10Q27	CNO-S27	5GA-Q27	
C26	50			22-3460	NPO-SI 50	TCZ-50	L10Q5	CNO-S50	5GA-Q50	
C27	10			22-3066	NPO-SI 10	TCZ-10	L10Q1	CNO-S10	5GA-Q1	
C28	.1	200		22-1777	P38SN-1	DF-104	CUB2P1	GEM-3001	47M-P1	
C29	.1	200		22-1777	P38SN-1	DF-104	CUB2P1	GEM-3001	47M-P1	
C30	.1	1000	10%	22-17				JL-1G	SGA-D1K 10% *	
C31	10000			22-3	BPD-01	DD-103	BYA10S	B-10	5HK-S1	
C32	10000			22-3	BPD-01	DD-103	BYA10S	B-10	5HK-S1	
C33	.1	400		22-3001	P48SN-1	DF-104	CUB4P1	GEM-401	47M-P1	
C34	4.3			22-3072			C10V47C	ZT-5547	5TCCB-V43S *	
C35A	1000		10%	DI-1000				JL-2G	5HK-S1GS 10%	
B	1000		10%	DI-1000				JL-1G		
C36	470		10%	22-3480	DS-470	DS-471	22R547	D-347	MS-347	
C37	20		MPO 5%			DTZ-20	C50QSC	CNO-433	5TCC-Q2S 5% *	②
C38	10000			22-3	BPD-01	DD-103	BYA10S	B-1G	5HK-S1	
C39	470			22-18	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C40	10		MO50 10%	22-2411						
C41	2200			22-5	BPD-0022	DD-222	BYA10D22	B-233	5HK-D22	
C42	2200			22-5	BPD-0022	DD-222	BYA10D22	B-233	5HK-D22	
C43	3300			22-11	BPD-0033	DD-332	BYA10D33	B-333	5HK-D33	
C44	470			22-18	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C45	.0068	400	10%	22-3501	V84C4S68		P68SD8	GTM-4S68	47M-D68	
C46	022	400	10%	22-2621	V84C4S22		C10V4C	GTM-4122	47M-S22	
C47	.1	400		22-3001	P48SN-1	DF-104	CUB4P1	GEM-401	47M-P1	
C48	.1	600		22-3135	P68SN-1	DF-104	CUB6P1	GEM-601	47M-P1	
C49	.033	1000	10%	22-3040					10TM-S3	
C50	1000	1000	10%	22-17				JL-1G	SGA-D1K 10% *	
C51A	15			22-26		DD-500	L10QS1		5GA-Q5	
B	51	1000				DD-500	L10QS1		5GA-Q5	
C52A	1000		10%	22-15	BPD-E2001		1R5K	JL-1G	5HK-E2S 10% *	
B	1000		10%				1R5Z	JL-2G		
C53	.047	300		22-1178	P38SN-047	DF-503	CUB3P47	GEM-4347	47M-S47	
C54	470			22-18	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C55	680			22-3901	1469-00068	D6-681	1R5T68	JL-368	MS-368	
C56	3300			22-3093	1484-00033		1R5D33	JL-333	MS-333	
C57	470			22-15	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C58A	1500		10%	22-23	DI-1500		1R5H15	JL-2G	5HK-S2S15 10% *	
B	1500		10%		DI-1500		1R5E5	JL-1G		
C59	10000			22-3	BPD-01	DD-103	BYA10S	B-1G	5HK-S1	
C60	4700		10%	22-4700	DS-4700		1R5D47	JL-347	SGA-D47S 10% *	
C61	.1	600		22-3135	P68SN-1	DF-104	CUB6P1	GEM-601	47M-P1	
C62	90	6000	10,500 10%	22-3053						
C63	68	3000	10%					3DY-685	20GA-G68S 10% *	①

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Some versions may use 10,000mmf in this application (Part #22-3).
② Some versions may use 7.5mmf in this application (Part #22-3742).
③ Value may vary. Replace with original value.

CONTROLS

ITEM No.	RATING WATTS	ZENITH PART No	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	INSTALLATION NOTES
R1A	1meg	63-4463				PP1EL	Volume, Note 1
B	Shaft					DS-37	
C	Switch					Not Req.	Push-Pull Off-On
R2A	1meg	63-3E6	B-7G	A4T-1meg-Z	Q3J-13T	U5J	Tone
B	Shaft		Not Req.	K3S-3	Not Req.	Not Req.	
R3A	2meg	63-4465	B-8S	A4T-2meg-S	B1U-16S	HU5S	Focus, Note 2
B	Shaft		Not Req.	FX3-1/4	T3D	Not Req.	
R4A	10K	63-4098	AB-1G	A4T-10K-S	B1U-11S	TA4L	AGC
B	Shaft		AE-1	FX3-1/4	S6J	Not Req.	
R5A	750K	63-3299	B-9S	A4T-750K-S	Q1J-13S	U4	Vert. Hold
B	Shaft		Not Req.	K3S-3	Not Req.	Not Req.	
R6A	7.5meg	63-4456	AB-9S	A4T-7.5meg-S	B1U-14S	PTA75L	Vert. Size
B	Shaft		AE-1	FX3-1/4	T3D	Not Req.	
R7A	250K	63-3573	B-8U	A4T-250K-S	Q1J-13U	U6S	Brightness
B	Shaft		Not Req.	K3S-3	Not Req.	Not Req.	
R8A	3000Ω	63-3568	AB-S	A4T-3000-S	B1U-11S	PTA25SL	Vert. Lin.
B	Shaft		AE-1	FX3-1/4	S6S	Not Req.	
R9	50K	63-4066					Contrast, Tap ⑤ 10K
R10A	7500	63-3284	WW-7L *	39-500 *	W1U-10S *	FL-750 *	Bias, Hsp ⑤ 100Ω
B	Shaft		Not Req.	Not Req.	S8J	Not Req.	
R11A	5meg	63-4012		Not Req.	B1U-14J	PTA56L	Fringe Lock (Sync Stab.)
B	Shaft			Not Req.	T4D	Not Req.	

Note 1. Models B22SRZ, YZ, B23SEZ, RZ, YZ, B23SSFZI, RZI, WZI, C2673Z, R use Part #63-4005. Models C23SZ, R, W use Part #63-4373
Note 2. Models B22SRZ, YZ use Part #63-4036
* Use (100) series resistor

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	WATT	ZENITH PART No.	NOTES
R12	3300Ω	3	62-4473	Note 1
R13	2.2meg		62-3268	
R14	100Ω		62-1788	
R15	680K		62-1906	
R16	22K		62-3548	
R17	22K		62-3548	
R18	560Ω		62-1753	
R19	1500Ω		62-1792	
R20	56K			Note 2
R21	56K			Note 2
R22	2200		62-1758	
R23	2200		62-1758	
R24	22Ω		63-1715	
R25	18K		62-4478	
R26	63000	3	62-4055	
R27	120Ω		62-1747	
R28	7500Ω		62-1803	
R29	27K		62-1545	
R30	33K		62-1765	
R31	100K		62-1899	
R32	15K		62-1854	
R33	47K		62-1858	
R34	15Ω		63-1708	
R35	18K		62-4478	
R36	75000	4	63-4055	
R37	3900Ω		62-1810	
R38	120K		62-1873	
R39	180K		62-1880	
R40	470K	1	62-3249	
R41	330K		63-1841	
R42	680K			
R43	3.3meg		63-4080	
R44	100K		62-1869	
R45	100K		63-1870	
R46	150K		63-1876	
R47	680Ω		63-1779	
R48	390K		63-1894	
R49	27K	2	63-4093	
R50	330Ω	2	63-1823	Note 3

ITEM No.	RATING OHMS	WATT	ZENITH PART No.	NOTES
R51	680Ω	1	63-2390	
R52	150K		63-1876	
R53	22K	2	63-1566	
R54	2.2meg		63-4389	
R55	100K		63-1870	
R56	82K		63-1866	
R57	56K		63-1840	
R58	22K		63-1042	
R59	56K			
R60	330K		63-1890	
R61	3.3meg		63-4080	
R62	150K		63-1786	
R63	2.2meg		63-1925	
R64	82K		63-1869	
R65	82K		63-1958	
R66	1200Ω	1	63-1978	
R67	1000Ω		63-1843	
R68	560Ω			
R69	560Ω			
R70	330K		63-1890	
R71	330K		63-1870	
R72	1meg		63-1911	
R73	120K		63-1873	
R74	100K		63-1869	
R75	100K		63-1969	
R76	5.6meg		63-4441	
R77	120K	3	63-2309	
R78	15K		63-1854	
R79	47K		63-1856	
R80	100Ω		63-1744	
R81	1meg		63-1913	
R82	100Ω		63-1744	
R83	2000Ω	3	63-4098	
R84	100K		62-4483	
R85	3.9Ω		63-4083	
R86	22K	1	63-1055	
R87	1000Ω		63-1788	
R88	27K	2	63-947	
R89	220K		63-2807	

Note 1. Used in some chassis using tuners 17S-194, 126. Ch 16C2R using these tuners use 2300Ω 3W (Part #63-4473).
Not used in some chassis using tuners 417S-101, -102. Some chassis using tuner 17S-101 use 330Ω 1W (Part #63-3162).
Some chassis using tuner 17S-103 use 470Ω 1W (Part #63-3248). Chassis using tuner 17S-123 use 3300Ω 3W (Part #63-1577).
Note 2. Some versions may use 120K in this application (Part #63-1873).
Note 3. Some versions may use 1000Ω 1W in this application (Part #63-1574).

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	REPLACEMENT DATA ZENITH PART No.	
K3	Vert Integrator		87-3	Sylvania V15
K2	Vert Feedback		87-4	Sylvania V14

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1A	1st Video IF	45-4383						
B	41.25MC Trap	45-4385						
L2A	39.75MC Trap							
B	41.25MC Trap	45-4384						
L3A	2nd Video IF	45-4343						
B	47.25MC Trap							
L4	3rd Video IF	45-4339	17-4533 *	17-4533 *	TV-130 *	6234 *	VF-3 *	
L5	4th Video IF	45-4398						Includes L45, L6
L6	Series Peaking Coil	45-4379 †	19-3075	19-3075	TV-198	6172		Block
L7	Shunt Peaking Coil	45-4349	19-3180	19-3180	TV-184	6180	VP-5	17tnh
L8	RF Choke	45-2588	19-1004	19-1004	BC-565	4610		6.7uh
L9	Shunt Peaking Coil	45-1601	19-2260	19-2260	TV-185	6181	VP-6	250uh
L10	Series Peaking Coil	45-4349	19-3180 ▲	19-3180 ▲	TV-184 ▲	6180 ▲	VP-5 ▲	170uh †
L11	1st Sound IF	45-4139			TV-130			
L12	2nd Sound IF	45-4757						
L13	Quadrature Coil	45-19030	20-1005 *	20-1005 *	TV-131 *	1480 *		

▲ Wound on 56000 resistor † Part of L5 * Drill new mounting hole. ▲ Parallel with 56000 resistor

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES PRI.	DC RES SEC.	REPLACEMENT DATA ZENITH PART No	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No	Thordarson PART No	NOTES
L24	93Ω		45-4579	HS-7	TV-165	6211 *		HS-7	Horiz. Freq. tapped ② 27tc

* Replace C56 (3300mmf) with 3900mmf cap.

TRANSFORMER (POWER)

ITEM No.	RATING PRI	SEC ①	SEC ②	REPLACEMENT DATA ZENITH PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T1	117V ⊕ 2A	580VCT ⊕ 250A tap ⊕ 25V ⊕ 10A	5V ⊕ 3 6A	45-1552 ①						
	SEC ③ 6.3V ⊕ 9.5A	SEC ④	SEC ⑤							
T2	PRI 117V ⊕ 1.6A	SEC ① 580VCT ⊕ 280A	SEC ② 5V ⊕ 3A	45-1555 ②						
	SEC ③ 6.3V ⊕ 7.6A	SEC ④	SEC ⑤							

① Used in Ch. 16C23Q. ② Used in Ch. 16CE, Q, U, Z, 16C25, 16C24.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output	45-1655	28ST1 ①	A-2S23	V31S ②	VO3S ②	A-1S49	28ST1 ①	A-11TX
T3	Yoke-Horiz. (13.8MH) (90°)-Vert. (443MH)	45-1654 ③	MDF-3 ③	MDF-3S ③ ⑤	YH0713/47 ③	PCMD54S ③ ⑤	DY-13A ③ ⑤	V-39 ③	T-60 ⑤ NW3 ⑤
	Rear Cover ⑥	9-23237							TC-1
	Centering Device	45-1643							
T4	Horiz. Output	45-45680							

① Connect as autoformer. Drill new mounting hole(s). Mount on top of chassis.
② Cut and tape green lead.
③ Includes rear cover and centering device
④ Connect yoke terminal #2 to terminal #4 of T4, connect 1000Ω, ½ watt resistor from yoke terminals #1 and #3 to terminal #5 of T4, yoke terminal #7 to terminal #3 of T4.
⑤ Use original rear cover, centering device, and horizontal yoke damping capacitor, if necessary. Cut and form a piece of .020 gage flash paper inside the yoke itself and support with an acetate cement, to provide an insulation between the wires sleeves and the yoke proper.
⑥ Connect yoke terminal #3 to terminal #4 of T4, connect 10000 ½ W resistor from yoke terminals #2 and #7 to terminal #3 of T4, yoke terminal #1 to terminal #2 of T4.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	10K	3-4Ω	45-1569	24S12	A-2923	AU-808	A-3879	36S62	S-17X	

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA ZENITH PART No.	QUAM PART No.	NOTES
SP1	8" 2½"	PM PM	3-4Ω 14-16Ω	40-780 ① 40-946 ② 40-781 ③	8A8S 3A8ST	① Models C3004Z, R, W, C3008R, C3223Z, R, Y, B2223Z, RZ, YZ, C3225Z, R, W, B3363RZ, RZI, WZI, C3245Z, R, W, C3246Z, R, W
				40-815 ④ 40-831 ⑤ 40-943 ⑥ 40-821 ⑦		② Models C3282Z, R, W. Two used in Models C3284R, R. Models C3232Z, Y, B3238RZ, YZ, C3002Z, R, C3018Z, W
				40-833 ⑧		③ Models C3246Z, R, W, C3007R, R, W
						④ Models C3247Z, R, W, C3237Z, R, W, C3007Z, R, W
						⑤ Two used in Models C3284R, R, W, C3008Z, R, W, C3009Z, W, Y
						⑥ Two used in Models C3284R, R, C3254Z, R, W
						⑦ Models C3282Z, R, W

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ZENITH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	105-20 ①	83-15 ②	83-1 ②	SD-1 ②			① Selenium Type. ② Silicon Type. (2 required)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ZENITH PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No FUSE	HOLDER
M2	N 7/10	700A 250V S/B	126-38	63-31	313.700 (N 7/10A-250V S/B)	346010	N 7/10	HN 1/2 to 3/4

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA ZENITH PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M3	1N94	103-23	1N64	1N23S	Video Det. (Pigtail)

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M4	Tuner	175-126	VHF Ch. 16C21Q, 16C22Q
	Tuner	175-124	VHF Ch. 16C21, Z, 16C23, 16C24
	Tuner	175-102	VHF Ch. 16C21
	Tuner	175-101	VHF with UHF Provisions, Ch. 16C21U
	Tuner	175-123	VHF with UHF Provisions, Ch. 16C21U, 16C23U, 16C24U
	Tuner	175-8	UHF 16C21U, 16C23U, 16C24U
M5	Width Sleeve		
M6	Magnet	S-46005	Anti-Pin Cushion

CABINET PARTS

(When Ordering Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	192-274	Models C2221R, Y, C2223E, R, Y, C2245E, R, W, C2246E, R, W
Safety Glass	192-275	Models C2221R, Y, C2223E, R, Y, C2225E, R, W, C2245E, R, W, C2246E, R, W, C2282E, R, W, C2284H, R
Safety Glass	192-239	Models B2221RZ, YZ, B2223EZ, RZ, YZ, B2245EZ1, RZ1, WZ1
Safety Glass	192-238	Models B2245EZ1, RZ1, WZ1
Safety Glass	192-262	Models C2247E, R, W, C2249H, R, W, C2254E, R, W
Safety Glass	192-263	Models C3000E, R, C3001E, R, W, C3004E, R, W, C3006E, R, W, C3007E, R, W, C3008R, C009E, W, Y
Safety Glass	192-244	Models C2673E, R, W
Knob	S-45716	VHF Channel Selector, Models C2221R, C2223E, C2225E, R, W, C2245E, R, W, C2246E, R, W, C2282E, R, W, C2284H, R
Knob	S-43769	VHF Channel Selector, Models C2673E, R, W, B2223EZ, RZ, YZ, B2245EZ1, RZ1, WZ1
Knob	S-44028	VHF Channel Selector, Models B2221RZ, YZ
Knob	46-2132	VHF Channel Selector, Model C2221Y
Knob	S-40969	VHF Channel Selector, Models C2247E, R, W, C2249H, R, W, C2254E, R, W
Knob	46-2003	Channel Selector, Models with Remote Control
Knob	S-45733	UHF Channel Selector, Used in all UHF Models except C2673EU, RU, WU
Knob	S-45486	UHF Channel Selector, Models C2673EU, RU, WU
Knob	S-43768	Fine Tuning, All Models except those having Remote Control
Knob	46-2035	Fine Tuning, All Models with Remote Control
Knob	S-45716	Volume, Models C2221R, C2223E, R, Y, C2225E, R, W, C2245E, R, W, C2246E, R, W, C2247E, R, W, C2249H, R, W, C2254E, R, W, C2284H, R, and Models with Remote Control
Knob	46-1924	Volume, Models B2221RZ, YZ
Knob	46-2132	Volume, Model C2221Y
Knob	46-1970	Volume, Models B2223EZ, RZ, YZ, B2245EZ1, RZ1, WZ1, C2673E, R, W
Knob	46-1997	Volume, Model C2282E, R, W
Knob	46-2094	Volume, Models C2282E, R, W
Knob	S-43672	Brightness, Vert. Hold, Tone
Knob	S-41482	Contrast
Knob	46-1118	Horiz. Hold

CABINETS

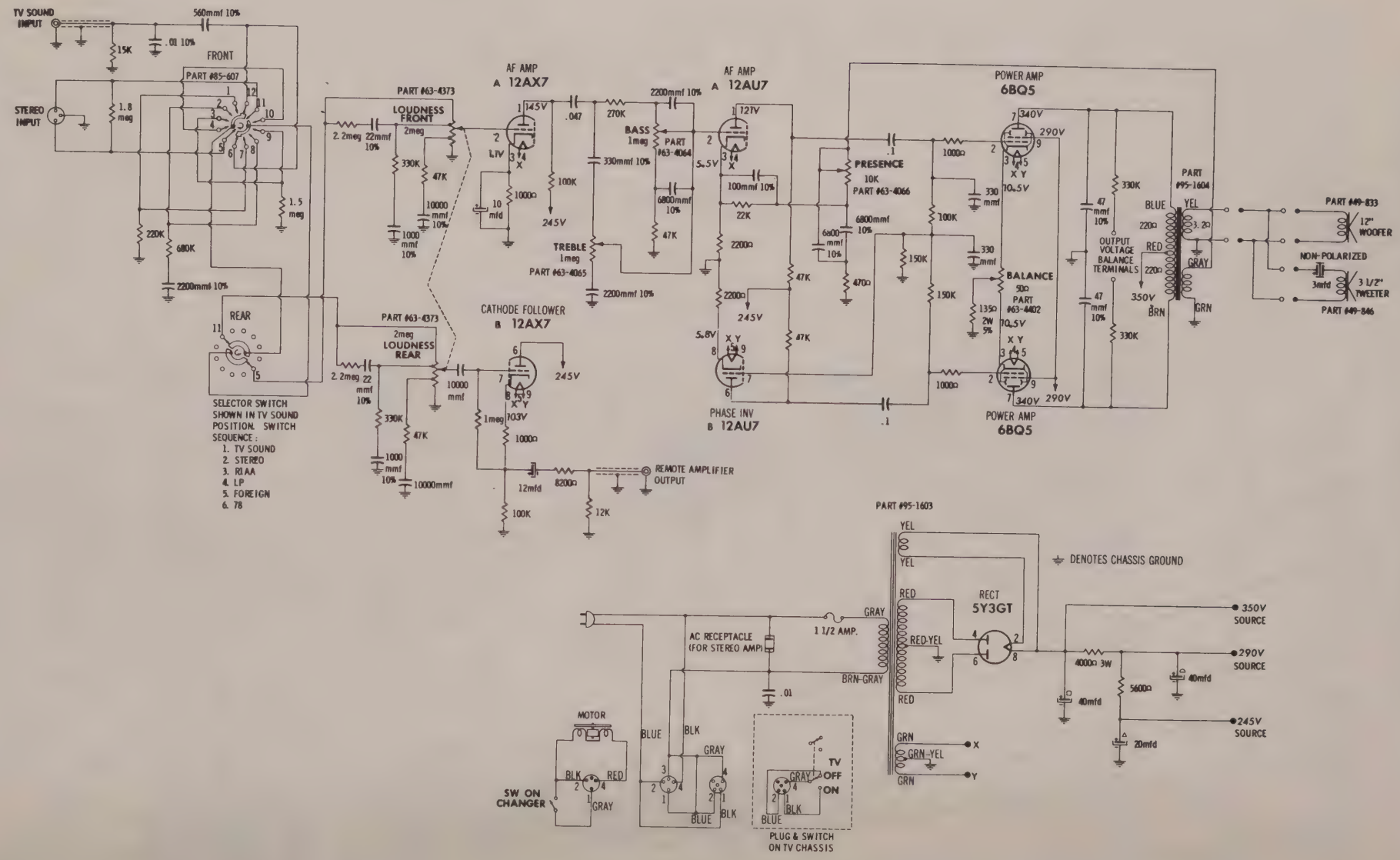
(When Ordering Cabinets Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Cabinet	14-2631W	Model C2254W
Cabinet	14-2637E	Model C2282E
Cabinet	14-2637R	Model C2282R
Cabinet	14-2637	Model C2282W
Cabinet	14-2644H	Model C2284H
Cabinet	14-2644R	Model C2284R
Cabinet	14-2482E	Model C2673E
Cabinet	14-2482R	Model C2673R
Cabinet	14-2482	Model C2673W
Cabinet	14-2474	Models C3000E, C3001E
Cabinet	14-2473	Models C3000R, C3001R
Cabinet	14-2638	Model C3001W
Cabinet	14-2618E	Model C3004E
Cabinet	14-2618R	Model C3004R
Cabinet	14-2618W	Model C3004W
Cabinet	14-2645E	Model C3006E
Cabinet	14-2645R	Model C3006R
Cabinet	14-2645W	Model C3006W
Cabinet	14-2597E	Model C3007E
Cabinet	14-2597R	Model C3007R
Cabinet	14-2597W	Model C3007W
Cabinet	14-2626R	Model C3008R
Cabinet	14-2629E	Model C3009E
Cabinet	14-2629W	Model C3009W
Cabinet	14-2629Y	Model C3009Y

NAME	PART NO.	DESCRIPTION
Cabinet	14-2601	Models C2221R, B2221RZ
Cabinet	14-2605	Models C2221Y, B2221YZ
Cabinet	14-2603	Models C2223E, B2223EZ
Cabinet	14-2602	Models C2223R, B2223RZ
Cabinet	14-2604	Models C2223Y, B2223YZ
Cabinet	14-2628W	Model C2225W
Cabinet	14-2628E	Model C2225E
Cabinet	14-2628R	Model C2225R
Cabinet	14-2299E	Model B2245EZ1
Cabinet	14-2299R	Model B2245RZ1
Cabinet	14-2299W	Model B2245EZ1
Cabinet	14-2595E	Model C2245E
Cabinet	14-2595R	Model C2245R
Cabinet	14-2595W	Model C2245W
Cabinet	14-2622E	Model C2246E
Cabinet	14-2622R	Model C2246R
Cabinet	14-2622W	Model C2246W
Cabinet	14-2620E	Model C2247E
Cabinet	14-2620R	Model C2247R
Cabinet	14-2620W	Model C2247W
Cabinet	14-2596H	Model C2249H
Cabinet	14-2596R	Model C2249R
Cabinet	14-2596W	Model C2249W
Cabinet	14-2631E	Model C2254E
Cabinet	14-2631R	Model C2254R

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor



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STEREO AMPLIFIER 5B26

REMOTE CONTROL S-45832
PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st RF Amp.	6AU6A	
V2	2nd RF Amp.	6AU6A	
V3	Tripler	6AU6A	
V4	Discriminator	6AL5	
V5	Sound Relay Control-Tuning Relay Control	6CM7	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	5	50	22-2941	PRS50V5	BBR5-50	TC50X	TD-5-50	TVA-1303	
C2	10	350	22-2943	PRS350V10	BR1045	TC62	TD-10-450	TVA-1604	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	10000			22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C4	470	1000	10%	22-6		MD-471		JL-347	5GA-T47S 10% *	
C5	10000			22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C6	10000			22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	680		10%	22-2901	1469-00068	D6-681	1R5T68	JL-368	MS-368	
C8	10000			22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C9	680		10%	22-2901	1469-00068	D6-681	1R5T68	JL-368	MS-368	
C10	100		10%	22-1442	1469-0001	D6-101	22R5T1	MCB235	MS-31	
C11	680		10%	22-2901	1469-00068	D6-681	1R5T68	JL-368	MS-368	
C12A	1000			22-21	BPD-2X001	DD2-102	BYC6DD1	B-210	5HK-2D1	
B	1000							B-210		
C13	.047	200		22-1778	P288N-047	DF-503	CUB4S47	GEM-4147	2TM-S47	
C14	.047	200		22-1778	P288N-047	DF-503	CUB4S47	GEM-4147	2TM-S47	

* Not normally in distributor' s stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R1	1.5meg		63-1919	
R2	390K		63-1894	
R3	150K		63-1876	
R4	1.2meg		63-1915	
R5	68K		63-1862	
R6	100K		63-1870	
R7	1meg		63-1912	
R8	82K		63-1866	
R9	100Ω		63-1744	

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R10	2.2meg		63-1925	
R11	2.2meg		63-1925	
R12	2.2meg		63-1925	
R13	1meg		63-1912	
R14	2.2meg		63-1925	
R15	1meg		63-1912	
R16	2200Ω		63-1800	
R17	150K		63-1876	
R18	1000Ω		63-1785	

COILS (RF-IF)

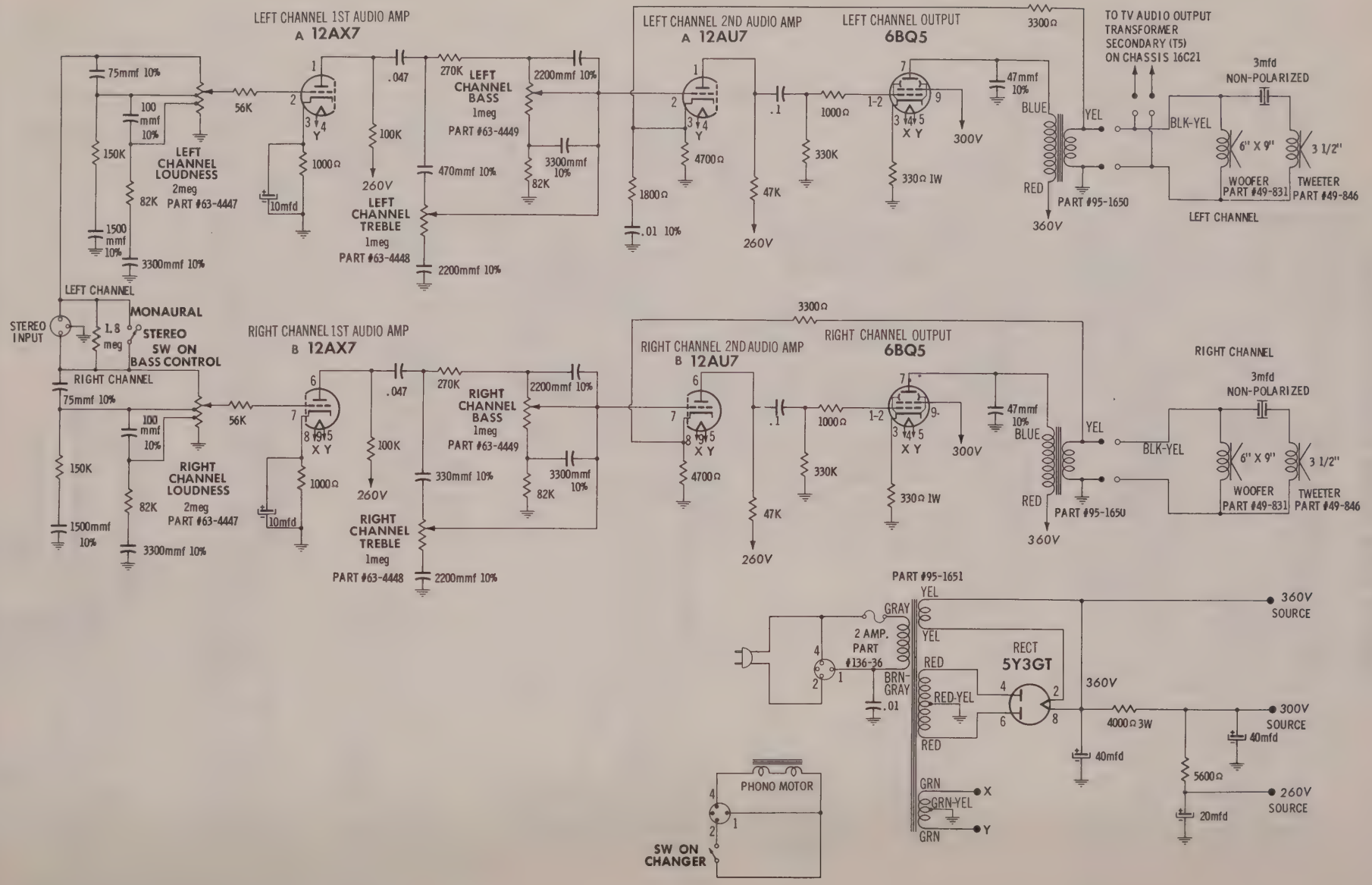
ITEM No.	USE	REPLACEMENT DATA						NOTES
		ZENITH PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	40.75KC Trans.	S-43725						
L2	Tripler Plate	S-24788						
L3	Discriminator	S-24789						Tapped @ 7Ω

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	ZENITH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.001A	212-21 ①					① Selenium Type

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Switch	85-580	Auto-Manual (DPDT Slide Type)
M3	Motor Switch Assy.	S-24798 & S-41499	
M4	Switch	S-44018	Channel Selector (On TV)
M5	Relay	195-5	Tuning
M6	Relay	S-24705	Sound
M7	Motor	141-154	
	Microphone	S-45443	



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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STEREO AMPLIFIER 5B28

REMOTE CONTROL S-45834
PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .50A	220V @ .040A tap @ 32V @ .001A tap @ 6.3V @ 2.8A	5V @ 2A	95-1612						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	ZENITH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.001A	212-21 ①					① Selenium Type.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	.750A 250V S/B	136-41	83-3027	312.750 (3AG-3/4A-250V-S/B)	356001	MDL 3/4	4406

MISCELLANEOUS

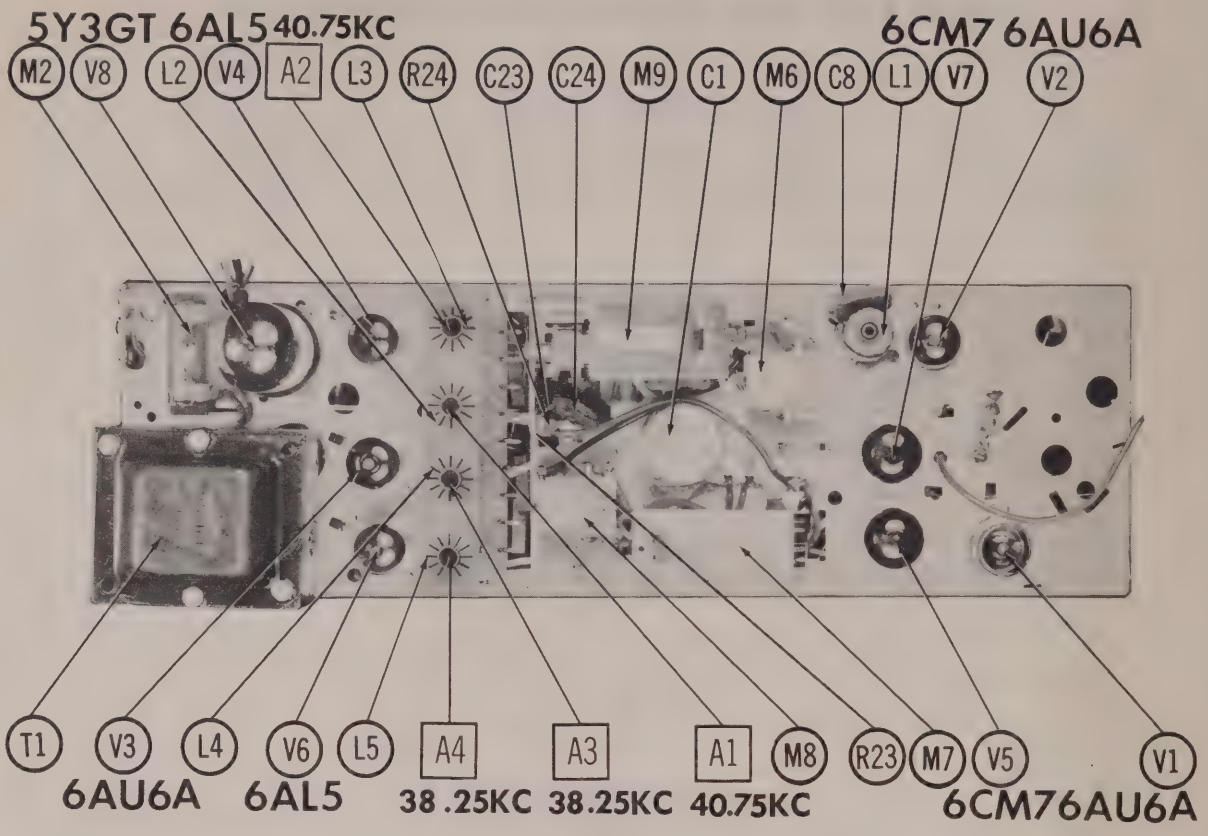
ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Switch	85-580	Auto-Manual (DPDT Slide Type)
M4	Switch	S-41498	Motor
M5	Switch	S-44018	Channel Selector (On TV escutcheon)
M6	Relay	195-5	Channel Selector (CCW)
M7	Relay	S-43723	Off-On-Volume (Step, Includes Switches)
M8	Relay	195-5	Channel Selector (CW)
M9	Relay	S-42705	Muting (Bi-Stable)
M10	Motor	141-148	
	Microphone Assy.	S-45443	

ALIGNMENT INSTRUCTIONS

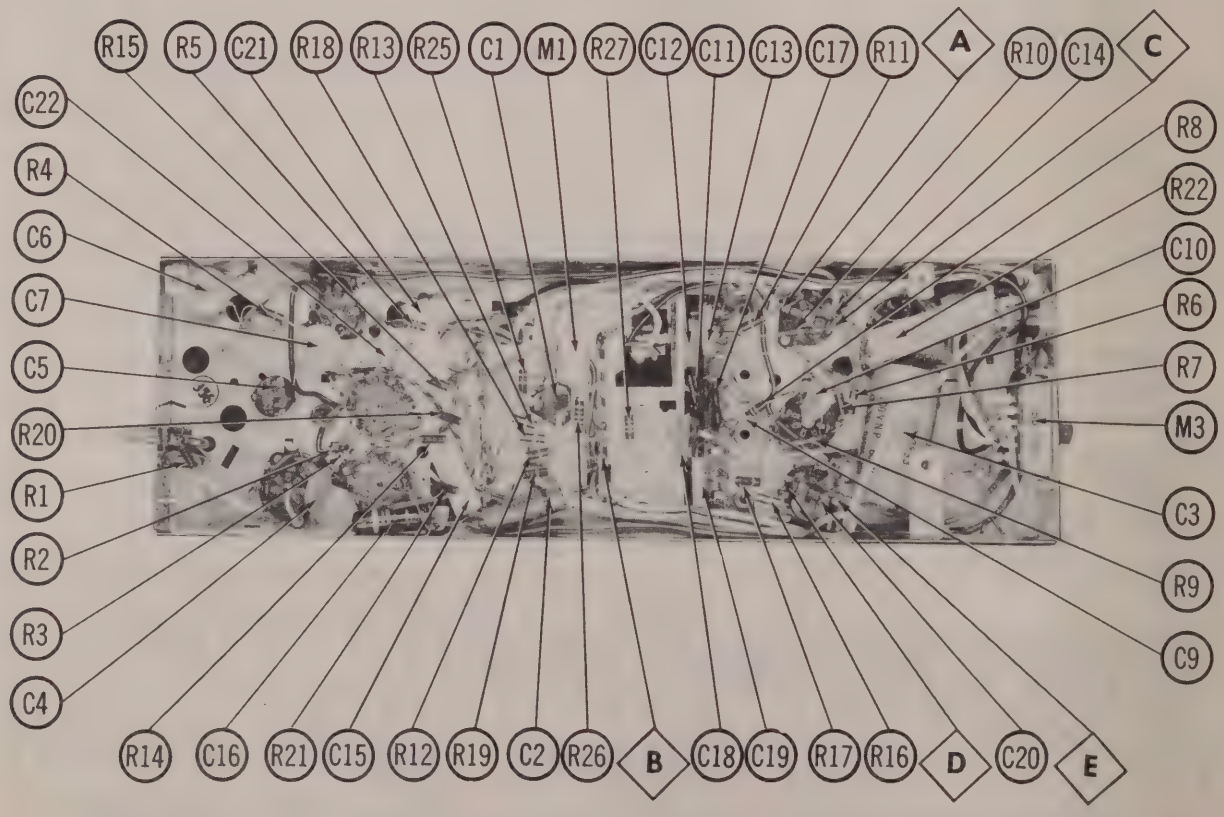
REMOTE CONTROL S-45834

Remove the 2 Relay Control tubes.
Use only enough generator output to provide a usable indication on VTVM.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

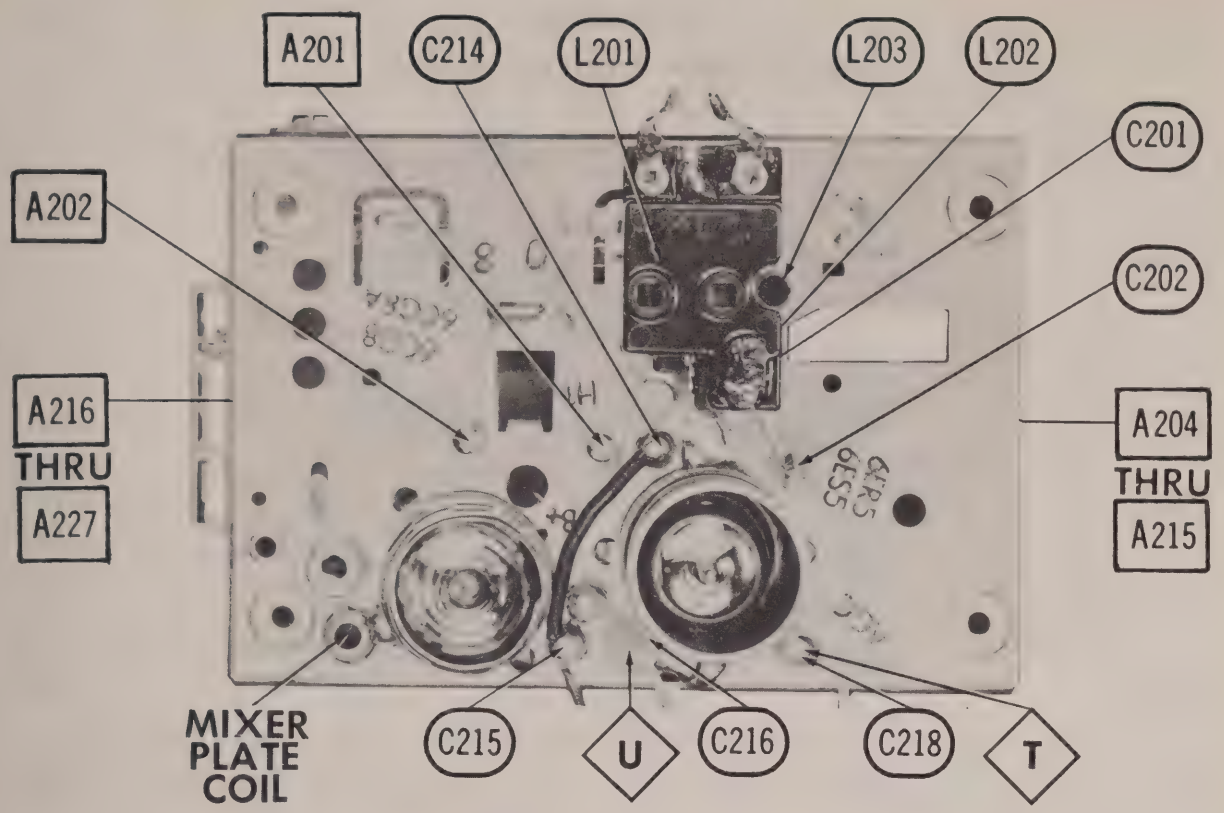
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of 1st RF Amp. Low side to chassis.	40.75KC (Unmod)		DC probe thru 1meg to point ◇A. Common to point ◇B.	A1	Adjust for maximum deflection.
2.	"	"	"		DC probe thru 1meg to point ◇A. Common to point ◇C.	A2	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
3.	Use transmitter used with unit as signal source. Place approximately 4 inches in front of microphone and repeatedly depress corresponding key to provide the signal. Connect the negative lead of the VTVM to point ◇B. While depressing transmitter keep checking voltages at points ◇A and ◇C. If more than 25% difference retouch A2 SLIGHTLY to bring within tolerance.						
4.	.01mfd	High side to pin 1 (grid) of 1st RF Amp. Low side to chassis.	38.25KC (Unmod)		DC probe thru 1meg to point ◇D. Common to point ◇B.	A3	Adjust for maximum deflection.
5.	"	"	"		DC probe thru 1meg to point ◇D. Common to point ◇E.	A4	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	Using transmitter used with unit as signal source. Place approximately 4 inches in front of microphone and repeatedly depress corresponding key to provide the signal. Connect the negative lead of the VTVM to point ◇B. While depressing transmitter keep checking voltages at points ◇D and ◇E. If more than 25% difference retouch A4 SLIGHTLY to bring within tolerance.						



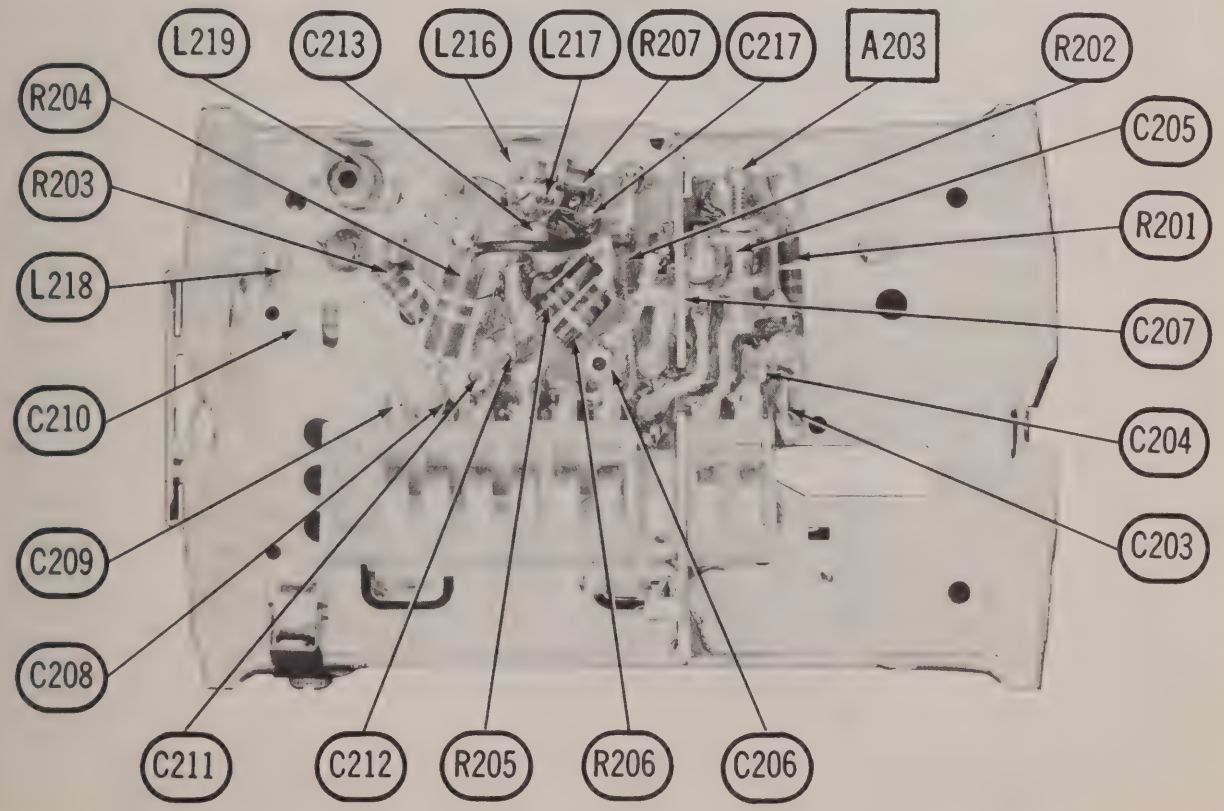
REMOTE CONTROL S-45834 - TOP VIEW



REMOTE CONTROL S-45834 - BOTTOM VIEW



TUNER 175-126 - TOP VIEW



TUNER 175-126 - BOTTOM VIEW

TUNER PARTS LIST AND DESCRIPTIONS

175-124, 175-126

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6ES5/GG	6ER5 *
V202	Mixer-Osc.	6CG8A	

* Alternate.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		N3300 7.5%	22-3060						
C202	30		+7 -3.5%	22-3111						
C203	28		10%	22-2920						
C204	24		10%	22-3146						
C205	1-4.5			22-3148		829-4		CT-551		
C206	1-4.5			22-3009		829-4		CT-551		
C207	75		5%	22-3147						
C208	18		N220 10%	22-3025						
C209	7.5		N150 ±.25mmf	22-3026						
C210	1000			22-3058	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C211	1-4.5			22-3009		829-4		CT-551		
C212	47		10%	22-2915						
C213	1000			22-2959	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C214	1000			22-2912	EF-001	MFT-1000			503C-D1	
C215	1000			22-2912	EF-001	MFT-1000			503C-D1	
C216	40			22-3112						
C217	1000			22-2912	EF-001	MFT-1000			503C-D1	
C218	1000			22-2912	EF-001	MFT-1000			503C-D1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R201	120K			
R202	1000Ω			
R203	3900Ω			
R204	15K	1	63-3179	

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R205	2700Ω			
R206	220K			
R207	33K			

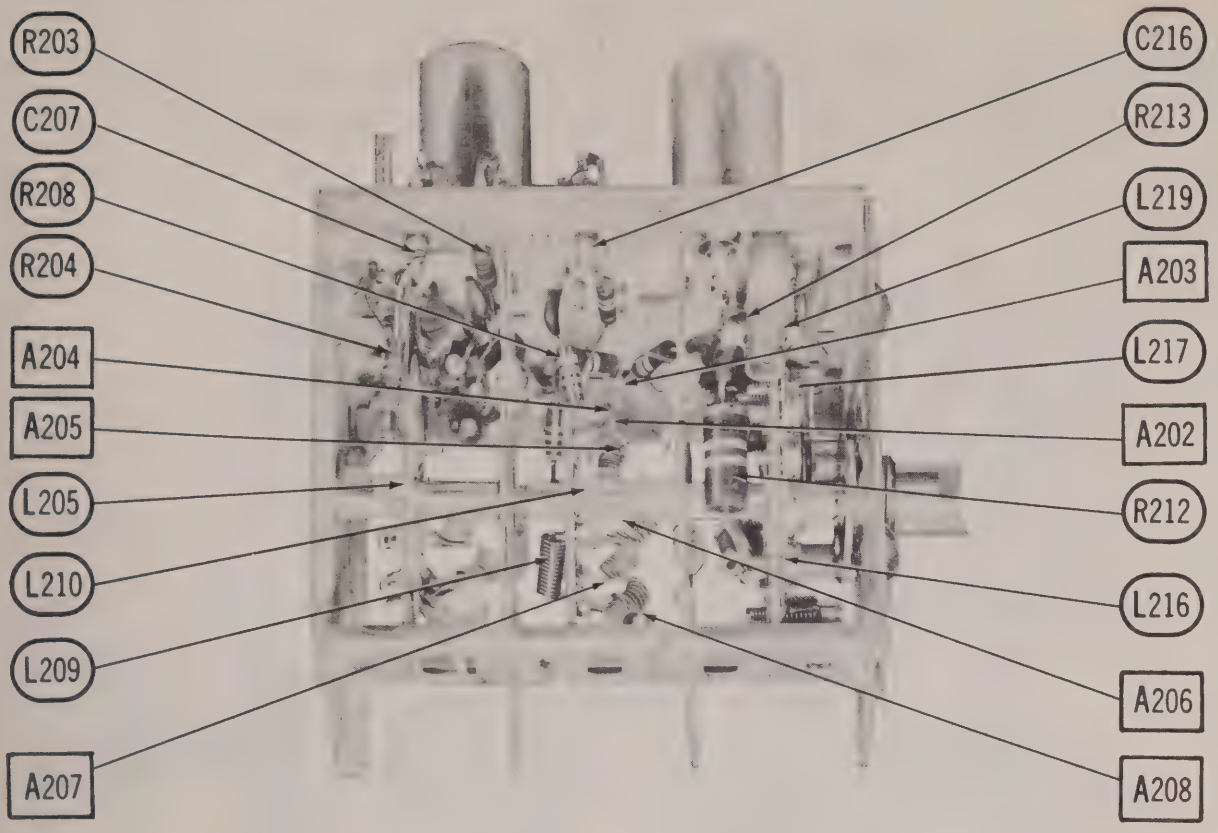
COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant. Trans. Assy.	S-41511	
L202	RF Choke	20-657	
L203	IF Trap Coil	S-40497	
L204	Ant., RF, Mixer Grid & Osc. Coils	174-2	Channel 2
L205	"	174-3	Channel 3
L206	"	174-4	Channel 4
L207	"	174-5	Channel 5
L208	"	174-6	Channel 6
L209	"	174-7	Channel 7

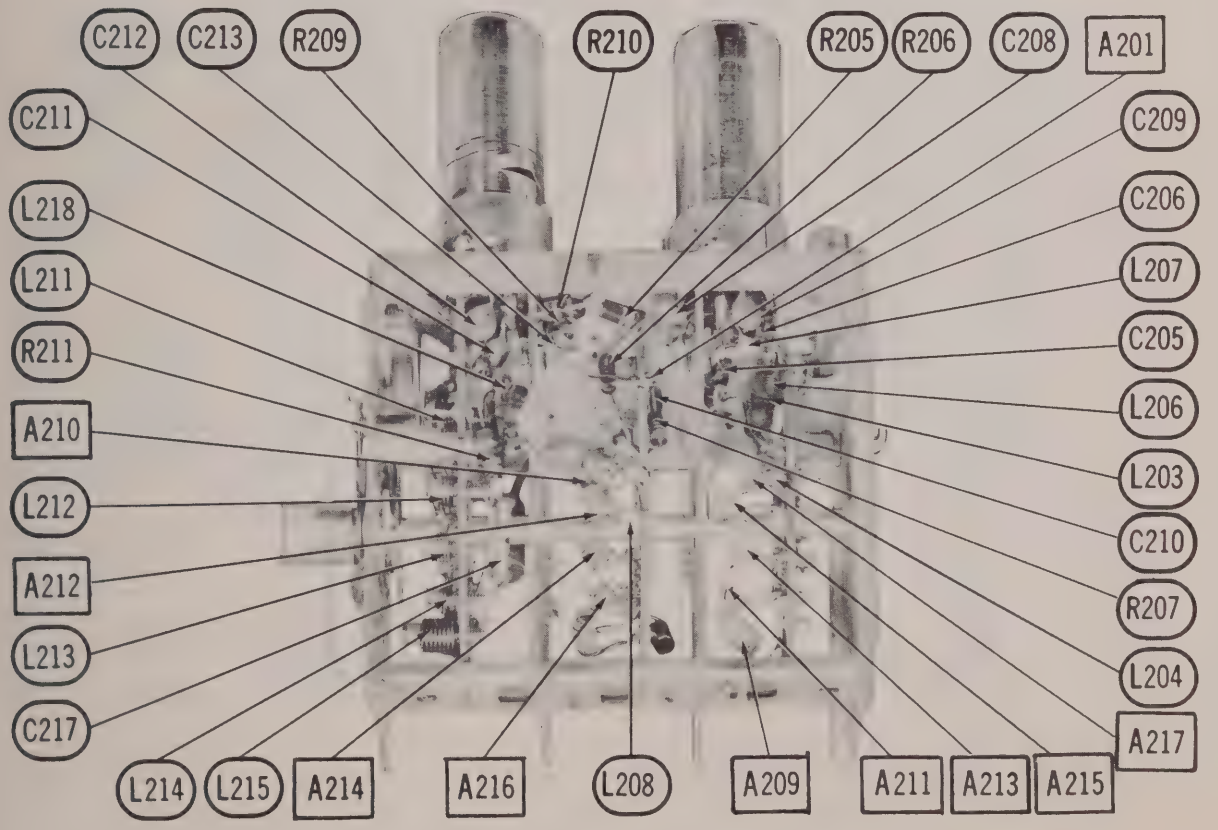
ITEM No.	USE	ZENITH PART No.	NOTES
L210	Ant., RF, Mixer Grid & Osc. Coils	174-8	Channel 8
L211	"	174-9	Channel 9
L212	"	174-10	Channel 10
L213	"	174-11	Channel 11
L214	"	174-12	Channel 12
L215	"	174-13	Channel 13
L216	Fil. Choke	20-734	
L217	RF Choke	20-721	
L218	Fine Tuning	S-43559	
L219	Mixer Plate	S-45638	

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
	Drum Assembly	S-46133	175-126
	Drum Assembly	S-46134	175-124
	Detent Spring	S-42971	Includes roller
	Osc. Slug	149-225	



TUNER 175-102A - LEFT SIDE



TUNER 175-102A - RIGHT SIDE

TUNER PARTS LIST AND DESCRIPTIONS

175-102A

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BK7B	
V202	Mixer-Osc.	6U8A	6EA8 *

* Alternate.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	12		2.5%	22-2679		TCZ-12			5TCC-Q12S 2.5% *	
C202	18	1000	5%	22-2680			C10Q18C	CNO-418	5GA-Q18S 5% *	
C203	18	1000	5%	22-2680			C10Q18C	CNO-418	5GA-Q18S 5% *	
C204	12		2.5%	22-2679		TCZ-12			5TCC-Q12S 2.5% *	
C205	8.2		NPO 5%	22-2681	NPO-DI 8.2		C10V82C			
C206	1.8			22-2428					5TCCB-V18S	
C207	1000			22-2889	EF-001	MFT-1000			503C-D1	
C208	1000			22-2889	EF-001	MFT-1000			503C-D1	
C209	800			22-2331	BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C210	25		N750 10%	22-2671	N750-DI 25	DTN-25	C10Q25U		5TCU-Q25	
C211	5		N330 5%	22-2716						
C212	5		N330 5%	22-2716						
C213	1			22-2720		TCZ-1		CNO-510	5TCCB-V1	
C214	1000			22-2889	EF-001	MFT-1000			503C-D1	
C215	1000			22-2889	EF-001	MFT-1000			503C-D1	
C216	1000			22-2889	EF-001	MFT-1000			503C-D1	
C217	1.0		N1500±.1mmf	22-2714						

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

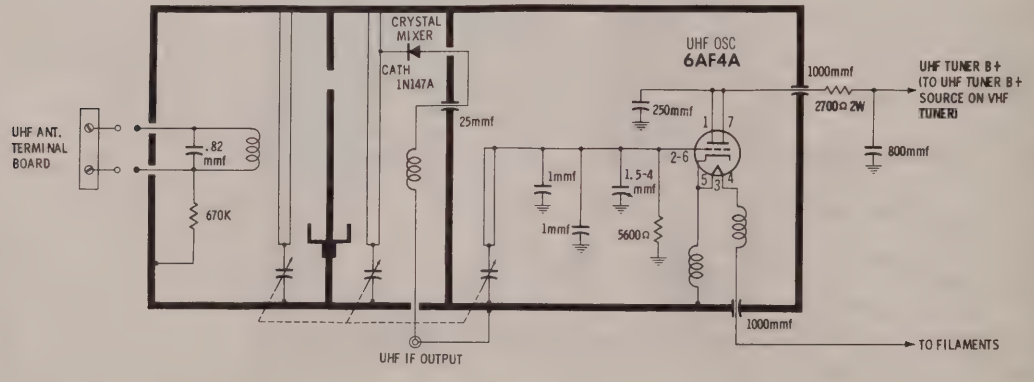
ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R201	230K			
R202	230K			
R203	2.2meg			
R204	22K			
R205	120K			
R206	100K			
R207	33K			

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R208	1200Ω			
R209	100K			
R210	10K			
R211	4700Ω			
R212	10K	2	63-3176	
R213	68K			

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant. Coil	20-567	
L202	Ant. Coil	20-567	
L203	Ant. Trans.	S-24644	Alternate Part #S-24645
L204	Ant. Coils	20-678	Channels 2-6
L205	Ant. Coils	S-43341	Channels 7-12 Includes wafer assembly
L206	Ant. Coil	20-600	Channel 13
L207	RF Choke	20-633	
L208	RF Coils	20-744	Channels 2-5
L209	RF Coil	20-579	Channel 6

ITEM No.	USE	ZENITH PART No.	NOTES
L210	RF Coils	S-23640	Channels 7-13
L211	Osc. Coil	20-662	Channel 2
L212	Osc. Coil	20-662	Channel 4
L213	Osc. Coil	20-663	Channel 3
L214	Osc. Coil	20-665	Channel 5
L215	Osc. Coil	20-666	Channel 6
L216	Osc. Coils	S-41807	Channels 7-12 Includes wafer assembly
L217	Osc. Coil	20-667	Channel 13
L218	RF Choke	20-632	
L219	Mixer Plate Coil	S-43490	



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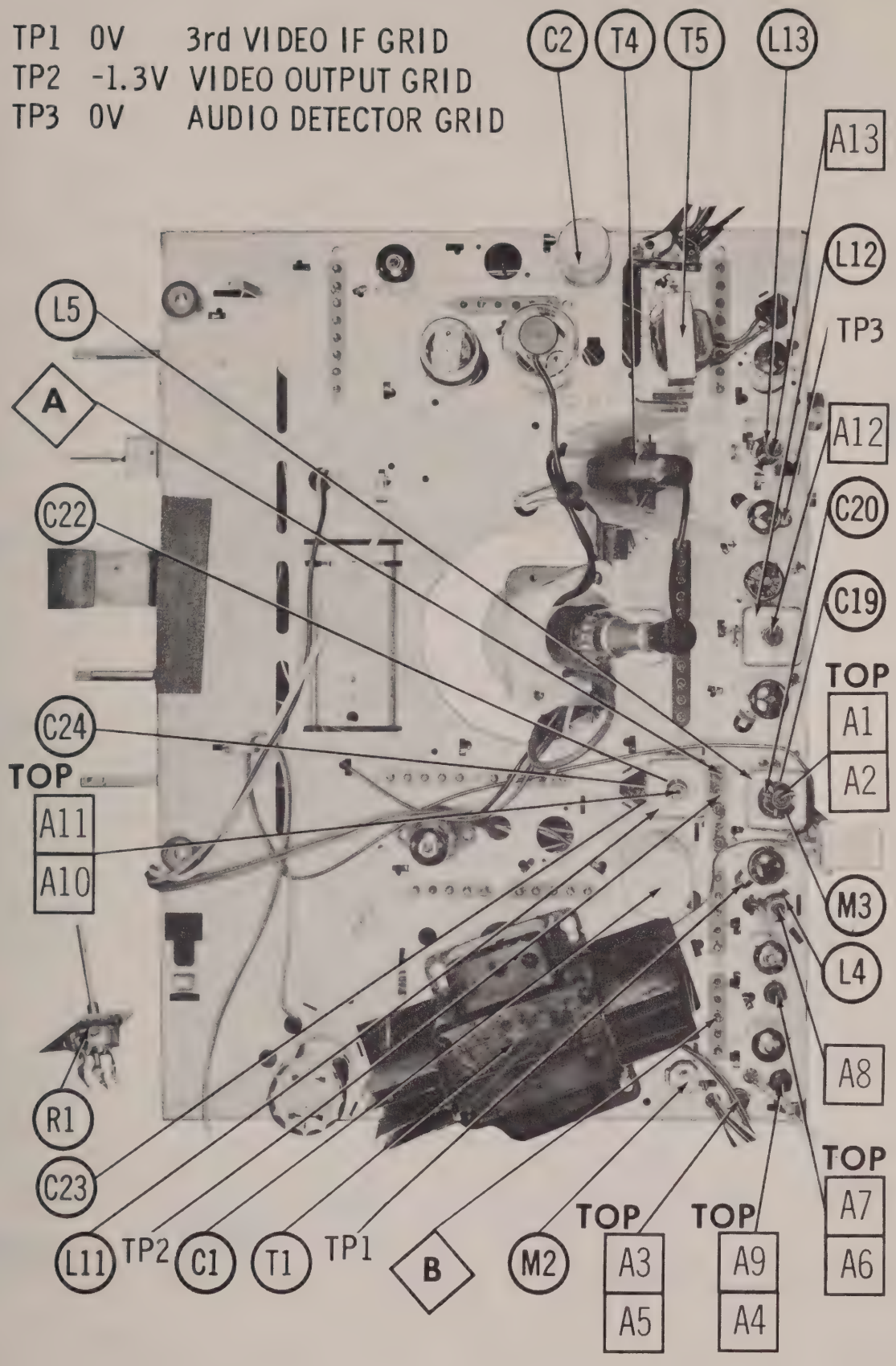
UHF TUNER 175-8

TP1 0V 3rd VIDEO IF GRID
TP2 -1.3V VIDEO OUTPUT GRID
TP3 0V AUDIO DETECTOR GRID



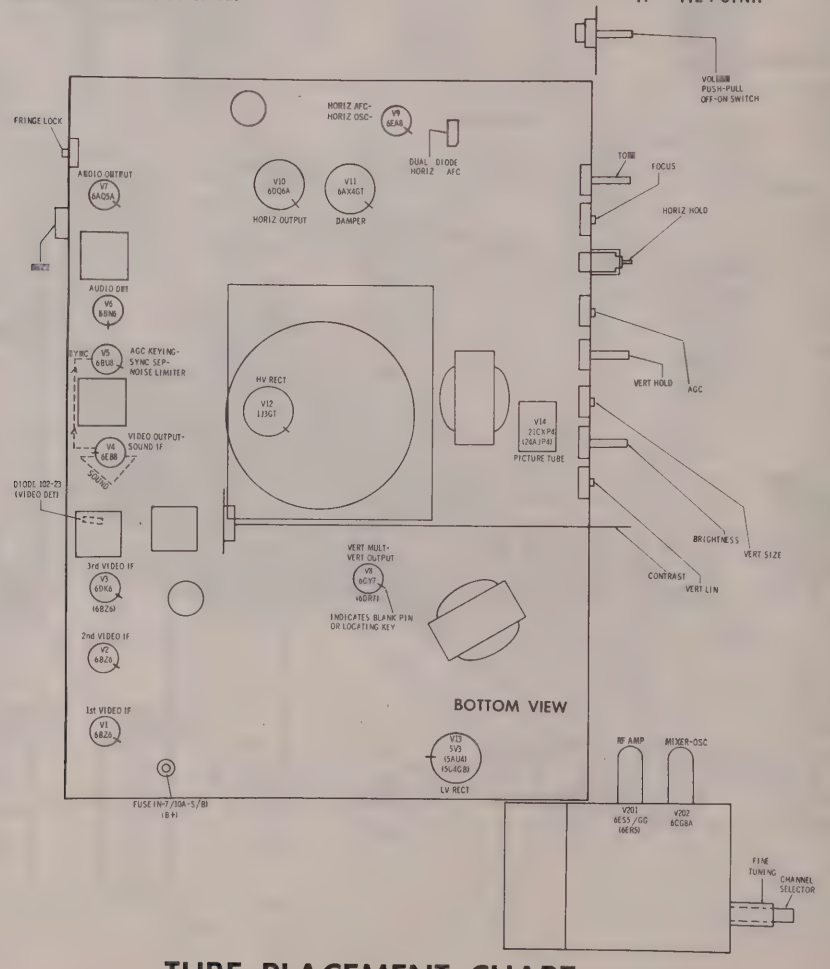
CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

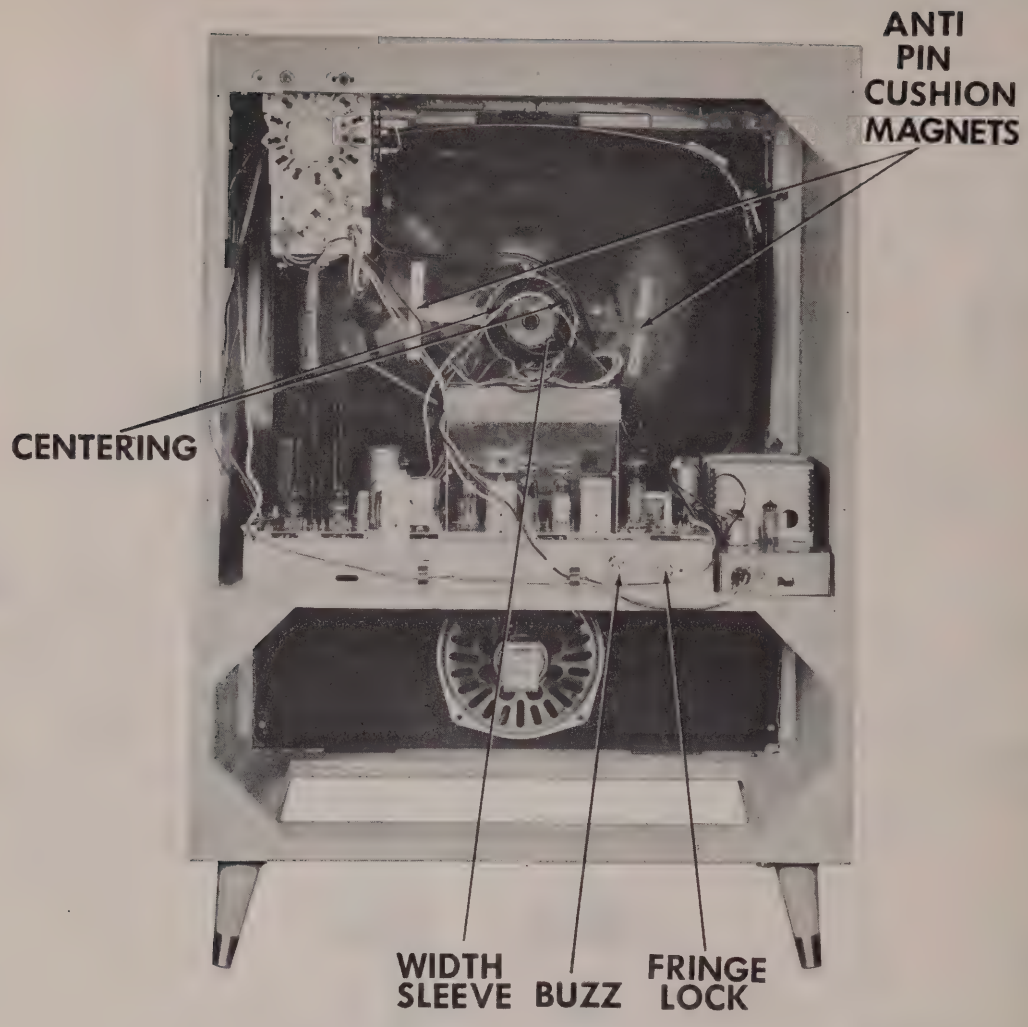
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1.2meg	1600Ω	.1Ω	0Ω	▲ 240Ω	▲ 240Ω	1500Ω		
V2	6BZ	30K	▲ 22Ω	.1Ω	0Ω	†220Ω	†220Ω	INF		
V3	6DK6	.1Ω	120Ω	0Ω	.1Ω	†8200Ω	†8200Ω	0Ω		
V4	6EB8	0Ω	100K	†150K	.1Ω	0Ω	15Ω	2700Ω	†27K	†7000Ω
V5	6BU8	● 6000Ω	†22K	650K	.1Ω	0Ω	†130K	● †800K	†80K	†8.2meg
V6	6BN6	● 250Ω	.1Ω	.1Ω	0Ω	†27K	5Ω	†390K		
V7	6AQ5A	0Ω	680Ω	.1Ω	0Ω	†1100Ω	†330Ω	0Ω		
V8	6CY7	†410Ω	2.2meg	2.2meg	0Ω	.1Ω	● ‡5.5meg	● 600K	0Ω	● 1700Ω
V9	6EA8	†100Ω	100K	†47K	0Ω	.1Ω	†120K	27Ω	0Ω	1.5meg
V10	6DQ6A	TP	.1Ω	NC	†8300Ω	1meg	TP	0Ω	0Ω	TOP CAP †17Ω
V11	6AX4GT	TP	TP	¶2meg	NC	†0Ω	NC	0Ω	.1Ω	
V12	1J3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †245Ω
V13	5V3	TP	¶	NC	24Ω	NC	29Ω	TP	¶	
V14	21CXP4	.1Ω	0Ω	Pin 6 ● ‡2.5meg	Pin 10 30K	Pin 11 ● 140K	Pin 12 0Ω			
V201	6ES5/GG	0Ω	3meg	0Ω	.1Ω	†4300Ω	0Ω	0Ω		
V202	6CG8A	3900Ω	†18K	0Ω	0Ω	.1Ω	†3300Ω	†36K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 270V SOURCE.
‡ MEASURED FROM PIN 3 OF V11.
▲ MEASURED FROM PIN 7 OF V2.

NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL C3004E

1. Remove 6 push-on type knobs from the front.
2. Remove 7 wood screws holding rear cover. Remove rear cover.
3. Remove 2 chassis plugs, speaker leads, 4 leads to tuner and plug to Channel Selector switch.
4. Remove 2 metal screws holding rear tuner bracket. Remove tuner from cabinet.
5. Remove 2 metal screws holding Off-On Volume control.
6. Remove 3 chassis bolts holding Remote Control chassis. Remove Remote Control chassis.
7. Remove 4 bottom chassis bolts. Remove chassis.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set Brightness and Contrast controls for a normal picture.

Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

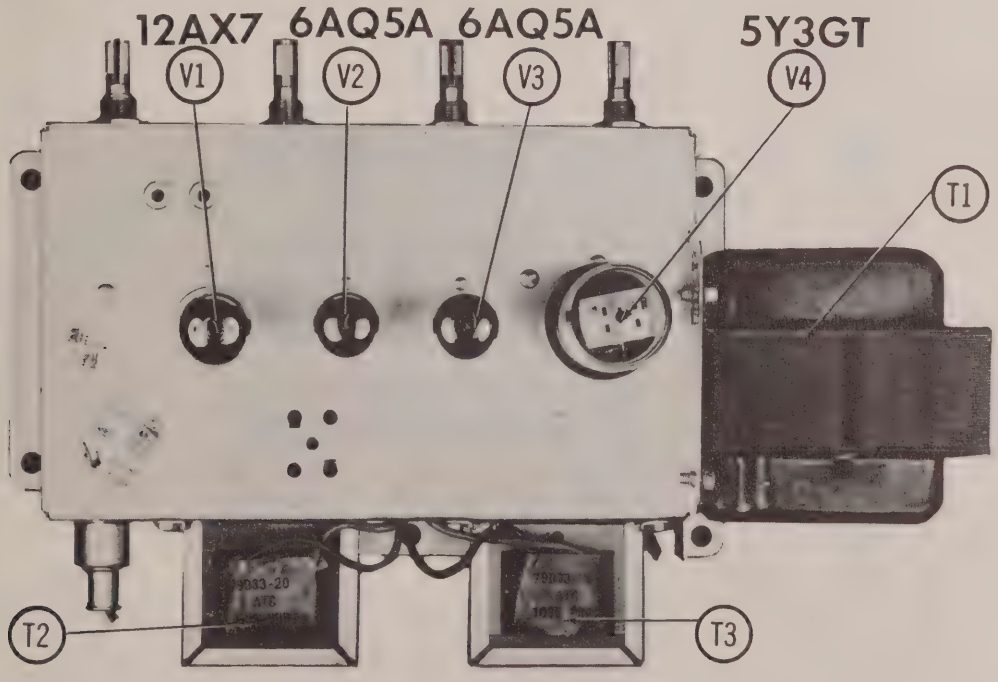
PHOTOFACT* Folder

ADMIRAL MODELS 601, 602, 603, 604, 612, 613, 614 (Ch. 4X2)

ADMIRAL MODELS 601, 602, 603, 604, 612, 613, 614 (Ch. 4X2)

TRADE NAME	Admiral Models 601, 602, 603, 604, 612, 613, 614 (Ch. 4X2)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	AC Operated Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 80 Watts, .77 Amp. @117 Volts AC (Less Motor)

RECORD CHANGER — ADMIRAL RC678-16P



ADMIRAL MODELS 601, 602, 603, 604, 612, 613, 614 (Ch. 4X2)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

J100

SET 449 FOLDER 3

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7	
V2	Left Channel Output	6AQ5A	
V3	Right Channel Output	6AQ5A	
V4	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	70	300	67B23-9			WT407		TVAS-3561*	
B	50	300							
C	30	250							
C2	20	250	67B4-41	PRS250V20	BR2025	TC55	TD-20-250	TVA-1508	
C3	10	6	67B35-7	PWE6010	EC10-6	TT6X10	ML10-6	TE-1087	
C4	50	25	67B4-31	PRS25V50	BBR50-25	TC29	TD-50-25	TVA-1206	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	35			65D6-10	SI 33	DD-330	L10Q33	CNO-433	5GA-Q33	
C6	5000			65D10-188	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C7	.01	400		64B8-32	P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C8	250			65D6-5	SI 250	DD-251	L10T25	B-325	5GA-T25	
C9	.022	600		64B8-30	P688N-022	DD-203	CUB6S22	GEM-6122	6TM-S22	
C10	10000			65D10-41	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C11	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	①
C12	35			65D6-10	SI 33	DD-330	L10Q33	CNO-433	5GA-Q33	
C13	5000			65D10-188	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C14	.01	400		64B8-32	P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C15	250			65D6-5	SI 250	DD-251	L10T25	B-325	5GA-T25	
C16	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	①
C17	.022	600		64B8-30	P488N-022	DD-203	CUB6S22	GEM-6122	6TM-S22	
C18	10000			65D10-41	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C19	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	①
C20	.047	600		63B12-1	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	

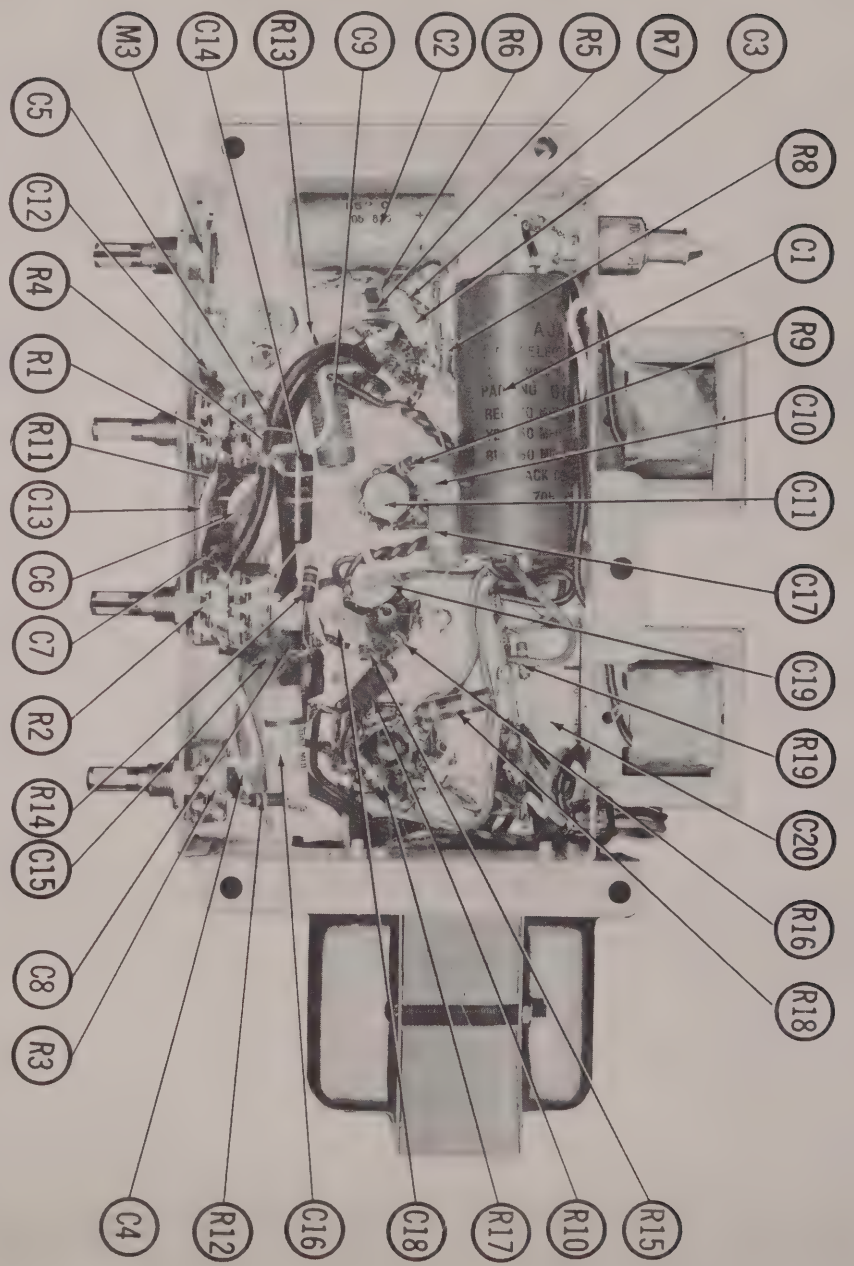
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	3meg	½	75B46-3				†UE-3956	Loudness Right Ch. Tap @ 1meg
B	3meg	½						Loudness Left Ch. Tap @ 1meg
R2A	1.5meg	½	75D1-118	B-742	A47-1.5meg-S	Q11-138	U155	Balance ①
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	1meg	½	75B46-4				■UE3954	Tone Right Chan.
B	1meg	½						Tone Left Chan.

† "STA-LOC" equivalent: FA36T95, RU36T16, CS3500
■ "STA-LOC" equivalent: FA16R, RU16R, CS3500
① Not used in some versions.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ADMIRAL PART No.	NOTES
R4	100K		60B8-104	
R5	3.3meg		60B8-335	
R6	470K		60B8-474	
R7	2200Ω		60B8-222	
R8	470K		60B8-474	
R9	3.9meg		60B8-395	
R10	150Ω	2	60B20-151	
R11	100K		60B8-104	
R12	22K			①
R13	3.3meg		60B8-335	①
R14	470K		60B8-474	
R15	470K		60B8-474	
R16	3.9meg		60B8-395	
R17	100Ω	1	60B14-101	
R18	1000Ω	1	60B14-102	
R19	27K		60B8-273	

① Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .77A	500 VCT ⓐ .160A	5V ⓐ 2A	80B60-2						
	SEC. 3	SEC. 4	SEC. 5							
	6.3 VCT ⓐ 1.3A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5300Ω	3-4Ω	79D33-20	26S49	A-3019	AU-604	A-8092	26S49	S-5Z	Left Channel
T3	5300Ω	3-4Ω	79D33-20	26S49	A-3019	AU-604	A-8092	26S49	S-5Z	Right Channel

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ADMIRAL PART No.	QUAM PART No.	NOTES
SP1	5"x7"	PM	3-4Ω	78C155-1①	57A15 ①	① Used in Model 601
SP2	5"x7"	PM	3-4Ω	78C155-1①	57A15 ①	② Two used in Models 602, 603, 604, 612, 613, 614
	8"	PM	3-4Ω	78C151-2②		
	3½"	PM	3-4Ω	78C148-1②		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA ADMIRAL PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M1	409B33-1-1 or 409B32	13-TB*				* Includes needles & mounting mechanism.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA ADMIRAL PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2	98C15-100 † or 98C15-102 ♦ and 98C15-101 † 98C15-103 ①	S69X * S69XSD †♦ S69XDD ♦	W-103STSS † ② W-103STDS ♦ † ②	* Metal † Jewel ♦ Diamond ① For cartridge #409332 ② Includes cartridge and mounting mechanism.

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M3	Switch	77A88-1	Monaural-Stereo (Rotary Wafer Type)
M4	Switch	408A1	On-Off-Reject
M5	Motor	407C29	4 Speed, 4 Pole

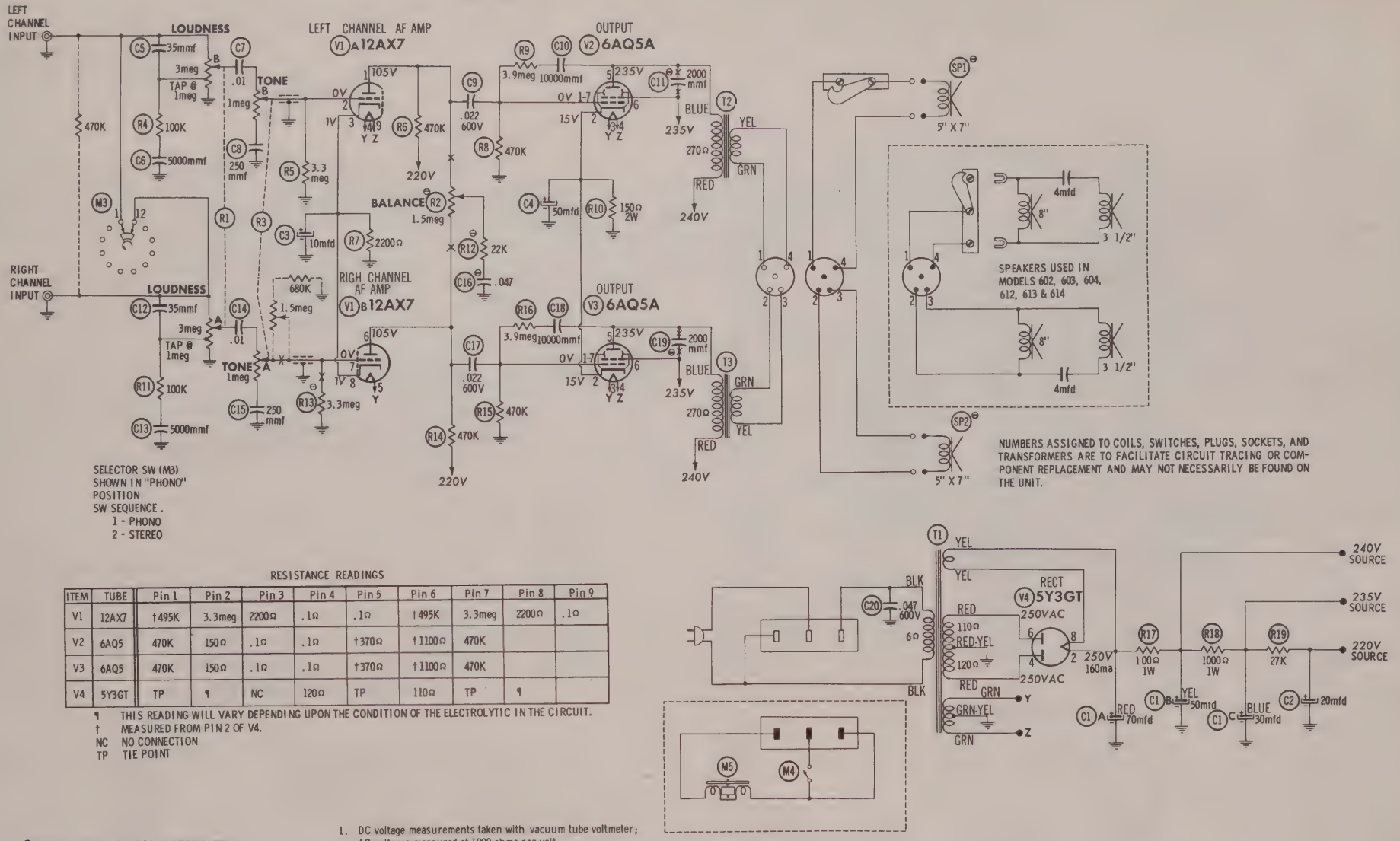
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	33C254-16	Control, 4 Used
Knob	403D86-4	Reject-On-Off
Cabinet	35E473-1	Blue-Gray And White, Model 601
Cabinet	35E467-2	Mahogany, Model 602
Cabinet	35E467-3	Blond, Model 603
Cabinet	35E467-4	Sierra, Model 604
Cabinet	35E462-2	Mahogany, Model 612
Cabinet	35E462-3	Blond, Model 613
Cabinet	35E462-4	Sierra, Model 614
Legs	37B132-8	Model 602, 603, 604
Legs	37D168-2	Models 612, 613, 614

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†495K	3.3meg	2200Ω	.1Ω	.1Ω	†495K	3.3meg	2200Ω	.1Ω
V2	6AQ5	470K	150Ω	.1Ω	.1Ω	†370Ω	†1100Ω	470K		
V3	6AQ5	470K	150Ω	.1Ω	.1Ω	†370Ω	†1100Ω	470K		
V4	5Y3GT	TP	¶	NC	120Ω	TP	110Ω	TP	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 2 OF V4.
NC NO CONNECTION
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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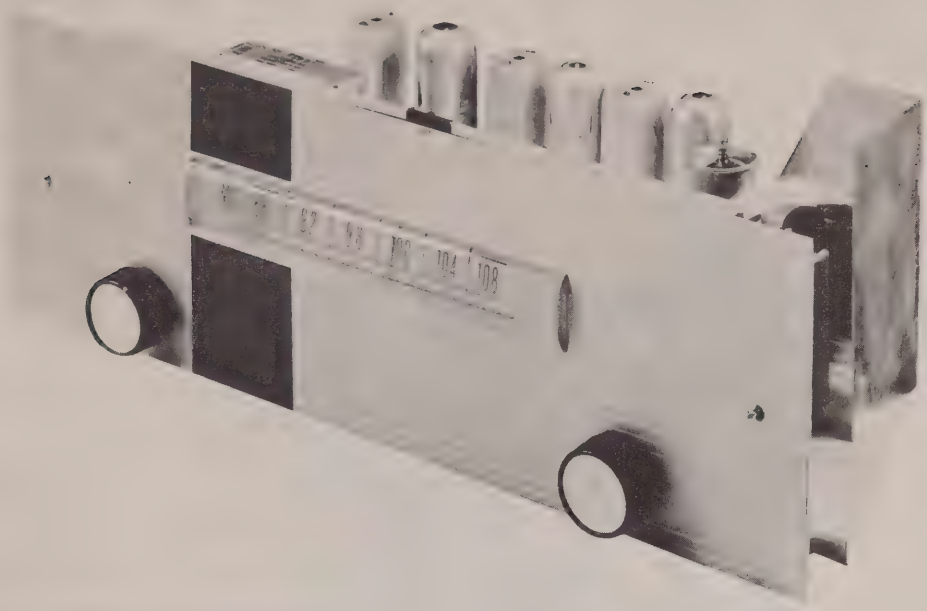
ADMIRAL MODELS 601, 602, 603, 604, 612, 613, 614 (Ch. 4X2)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

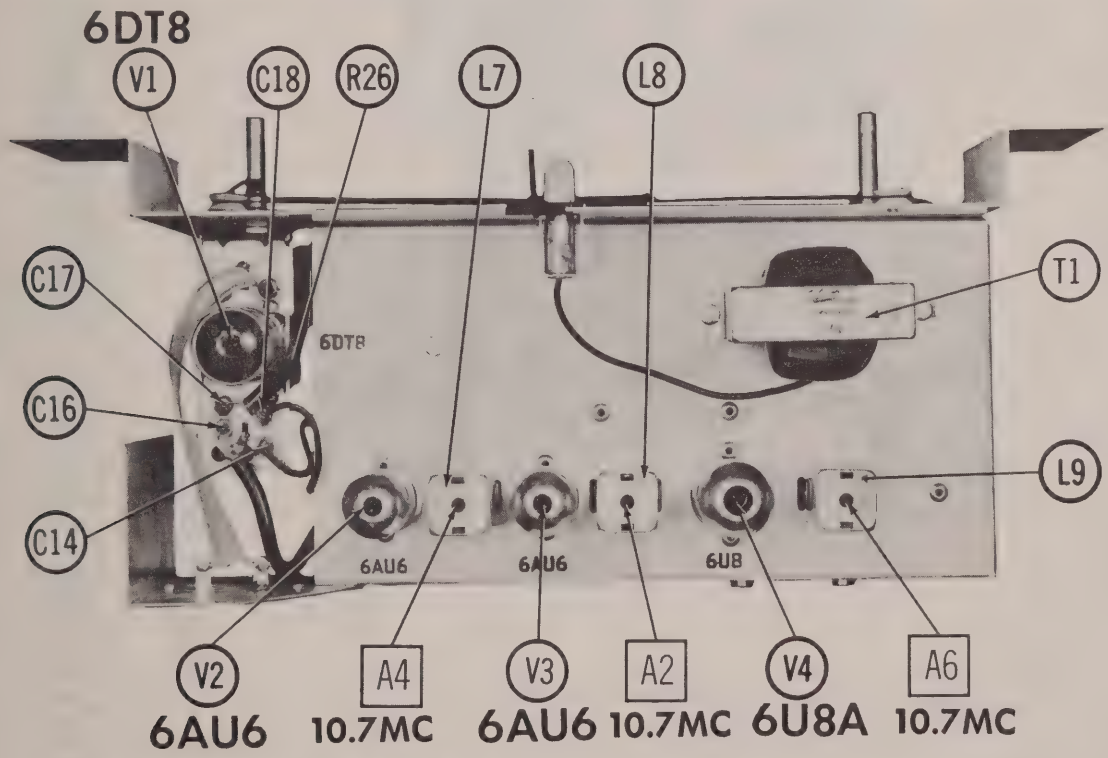
ALTEC LANSING
MODEL 307A

ALTEC LANSING
MODEL 307A



TRADE NAME	Altec Lansing Model 307A
MANUFACTURER	Altec Lansing Corp., 9356 Santa Monica Blvd., Beverly Hills, California
TYPE SET	AC Operated 4 Tube FM Tuner
POWER SUPPLY	110-120 Volts AC, 60 Cycles
RATING	24 Watts, .27 Amp. @ 117 Volts AC
TUNING RANGE—	FREQ. MOD. 88-108MC

ALTEC LANSING
MODEL 307A



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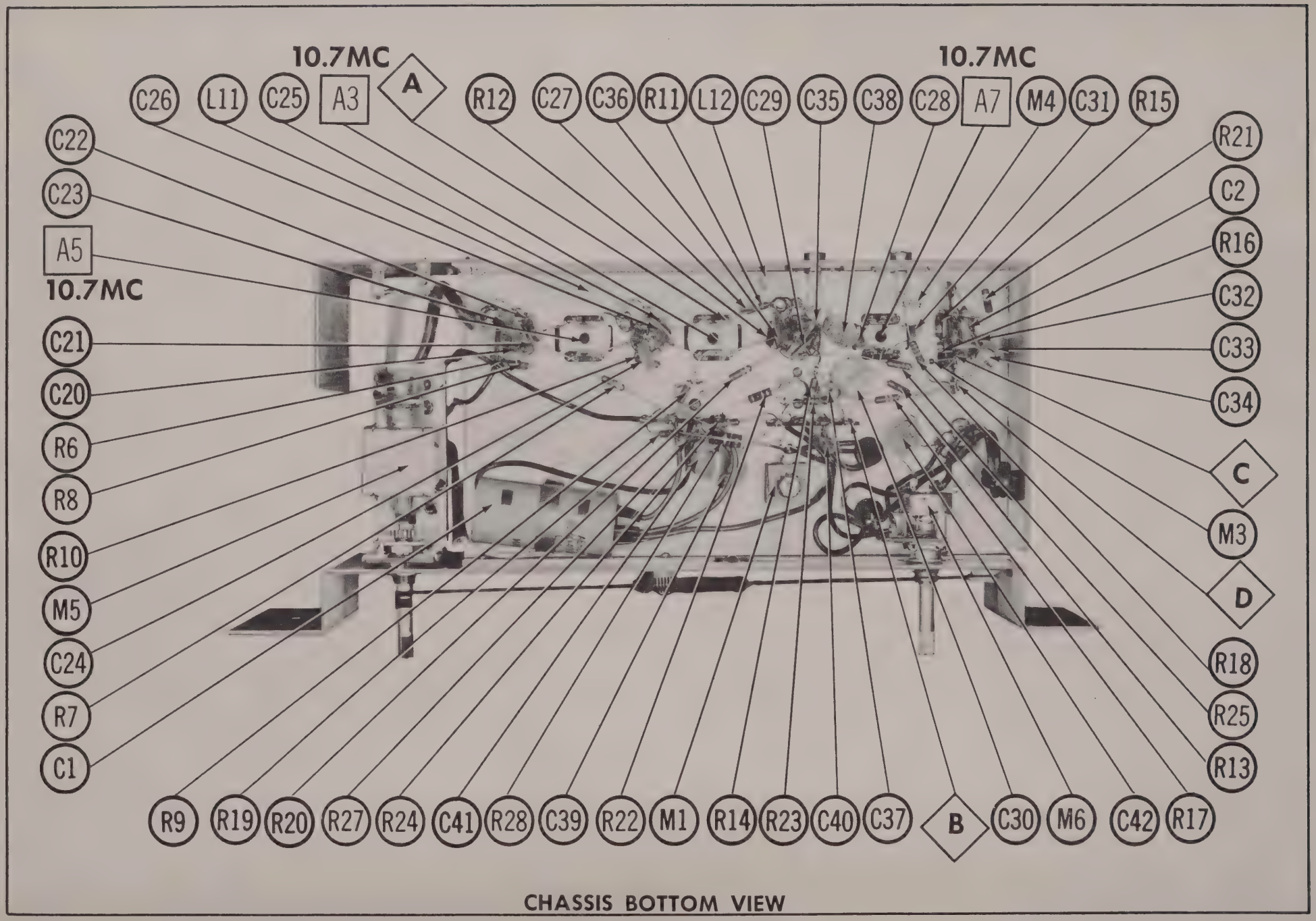


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amp. - Conv.	6DT8	
V2	1st IF Amplifier	6AU6	
V3	2nd IF Amplifier	6AU6	
V4	Limiter - Cath. Follower	6U8A	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Altec Lansing PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150V4040	BBRT44215	TCT3115	TDLT-5	TVA-3451	
B	40	150		40					
C	40	150							
C2	6	25		XPP-25006	BBR5-50	TT25X5	TD-5-25	TVA-1203	

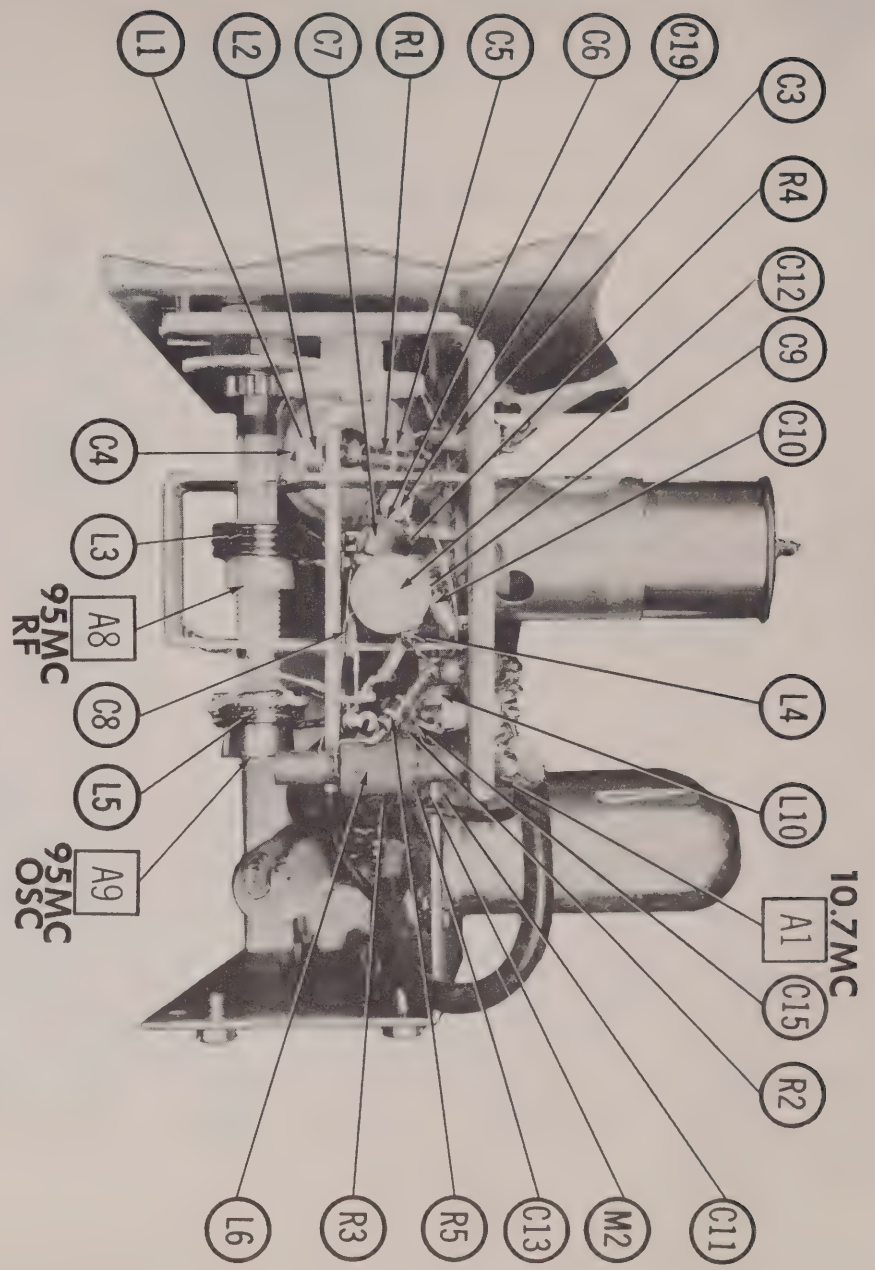
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	Altec Lansing PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	2									
C4	8.2		NPO ±.5mmf		NPO-DI 8.2					
C5	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C6	30		NPO 5%			TCZ-30	C10Q3C		5TCC-Q3S 5% *	
C7	30		NPO 5%			TCZ-30	C10Q3C		5TCC-Q3S 5% *	
C8	10		N220 5%							
C9	22		N220 5%							
C10	4.7		N150 ±.5mmf							
C11	1.8		5%							
C12	100		N750 10%		N750-DI 100	DTN-100	C10T1U	CN7-310	5TCU-T1S 10% *	
C13	8.2		NPO ±.5mmf		NPO-DI 8.2					
C14	1000				EF-001	MFT-1000			503C-D1	
C15	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C16	2									
C17	1000				EF-001	MFT-1000			503C-D1	
C18	1000				EF-001	MFT-1000			503C-D1	
C19	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C20	12		NPO 10%		NPO-DI 10	DTZ-10	C10Q12C	CNO-412	5TCC-Q12S 10% *	①
C21	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C22	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C23	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C24	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C25	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C26	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C27	330				BPD-00033	DD-331	L10T33	B-333	5GA-T33	
C28	4.5		N750 10%			DTN-4R7	C10V5U	CN7-547	5TCUB-V5S 10% *	②
C29	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C30	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C31	4.5		N750 5%			DTN-4R7	C10V5U	CN7-547	5TCUB-V5S 5% *	②
C32	330				BPD-00033	DD-331	L10T33	B-333	5GA-T33	
C33	330				BPD-00033	DD-331	L10T33	B-333	5GA-T33	
C34	330				BPD-00033	DD-331	L10T33	B-333	5GA-T33	
C35	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C36	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C37	330				BPD-00033	DD-331	L10T33	B-333	5GA-T33	
C38	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C39	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C40	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C41	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C42	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Some versions may use 10mmf NPO 10% in this application.
Note 2. Some versions may use 5mmf N750 5% in this application.

RF CHASSIS



PARTS LIST & DESCRIPTION (continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Altec Lansing PART No.	NOTES
R1	56Ω			
R2	4.7meg			
R3	120K			
R4	27K			
R5	3900Ω			
R6	220K			
R7	470Ω			
R8	100Ω			
R9	470Ω			
R10	100Ω			
R11	120K			
R12	10K			
R13	100Ω			
R14	10K			Note 1
R15	10K			
R16	10K			
R17	68K			
R18	22K			Note 1
R19	2.2meg			
R20	470Ω			
R21	10K			
R22	82K			Note 2
R23	2.2meg			
R24	22K			
R25	2.2meg			
R26	100Ω			
R27	470Ω			
R28	470Ω	1		

Note 1. Some versions may use 2200Ω in this application.

Note 2. Some versions may use 75K in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Altec Lansing PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil							
L2	Ant. Coil							
L3	RF Coil							
L4	RF Choke							.82uh
L5	Osc. Coil							
L6	1st IF Trans.							
L7	2nd IF Trans.	1607-1	16-3487	16-3487	FM-254	1463		
L8	3rd IF Trans.	1607-1	16-3487	16-3487	FM-254	1463		
L9	Ratio Detector	2607-5	17-3498	17-3498	FM-255	1465		
L10	Fil. Choke							1.3uh
L11	Fil. Choke							1.3uh
L12	Fil. Choke							1.3uh

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA: Altec Lansing PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .27A	125V @ .040A	6.3V @ 1.4A	6411	26R38 ①	P-3045 ①		PA8421 ①	26R38 ①	R-30X ①

① Drill new mounting hole.

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA: Altec Lansing PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.020A	SRO-50	1234AH 1 / HA154 2	TO65 1 / SD94 2	65A 1 / 11200 2		1 Selenium Type. 2 Silicon Type.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: Altec Lansing PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M2			1N60	1N60	AFC
M3	1N60		1N636	1N60	Ratio Detector
M4	1N60		1N636	1N60	Ratio Detector

MISCELLANEOUS

ITEM No.	PART NAME	Altec Lansing PART No.	NOTES
M5	RF Tuner Unit		(Standard Coil #HFA-004-1001)
M6	Switch	1004	Off-AFC-FM

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
Set switch to "FM" position (No AFC).
Suggested Alignment Tools: A1 ..... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547
A2 thru A7 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	270Ω Carbon Resistor	High side to antenna terminal. Low side to chassis.	10.7MC (Unmod.)	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5	Adjust for maximum deflection.
2.	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A6, A7	"
3.	"	"	"	"	"	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	270Ω Carbon Resistor	High side to antenna terminal. Low side to chassis.	10.7MC (450KC Swp.)	Point of non-interference	Vert. Amp. to point Ⓒ. Low side to chassis.	A1, A2, A3, A4, A5, A7	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
2.	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A6	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and striaightness of crossover lines.

RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	270Ω Carbon Resistor	High side to antenna terminal. Low side to chassis.	95MC (Unmod.)	95MC	DC probe to point Ⓐ. Common to chassis.	A8, A9	Adjust for maximum deflection.

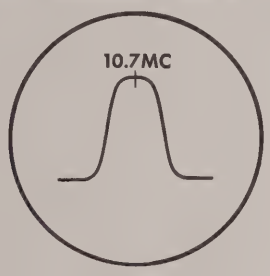


FIG. 1

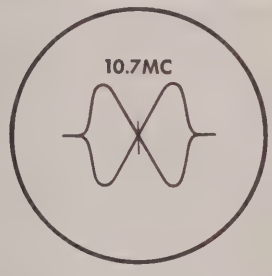
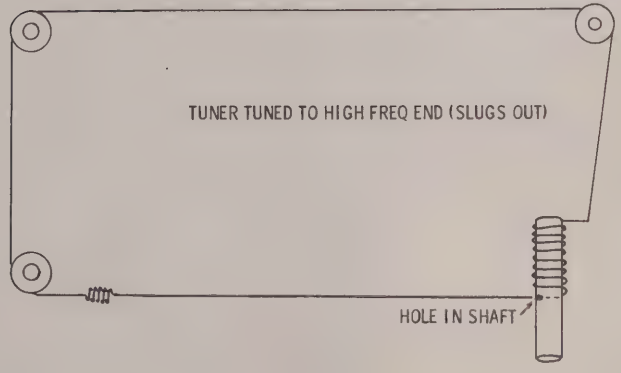
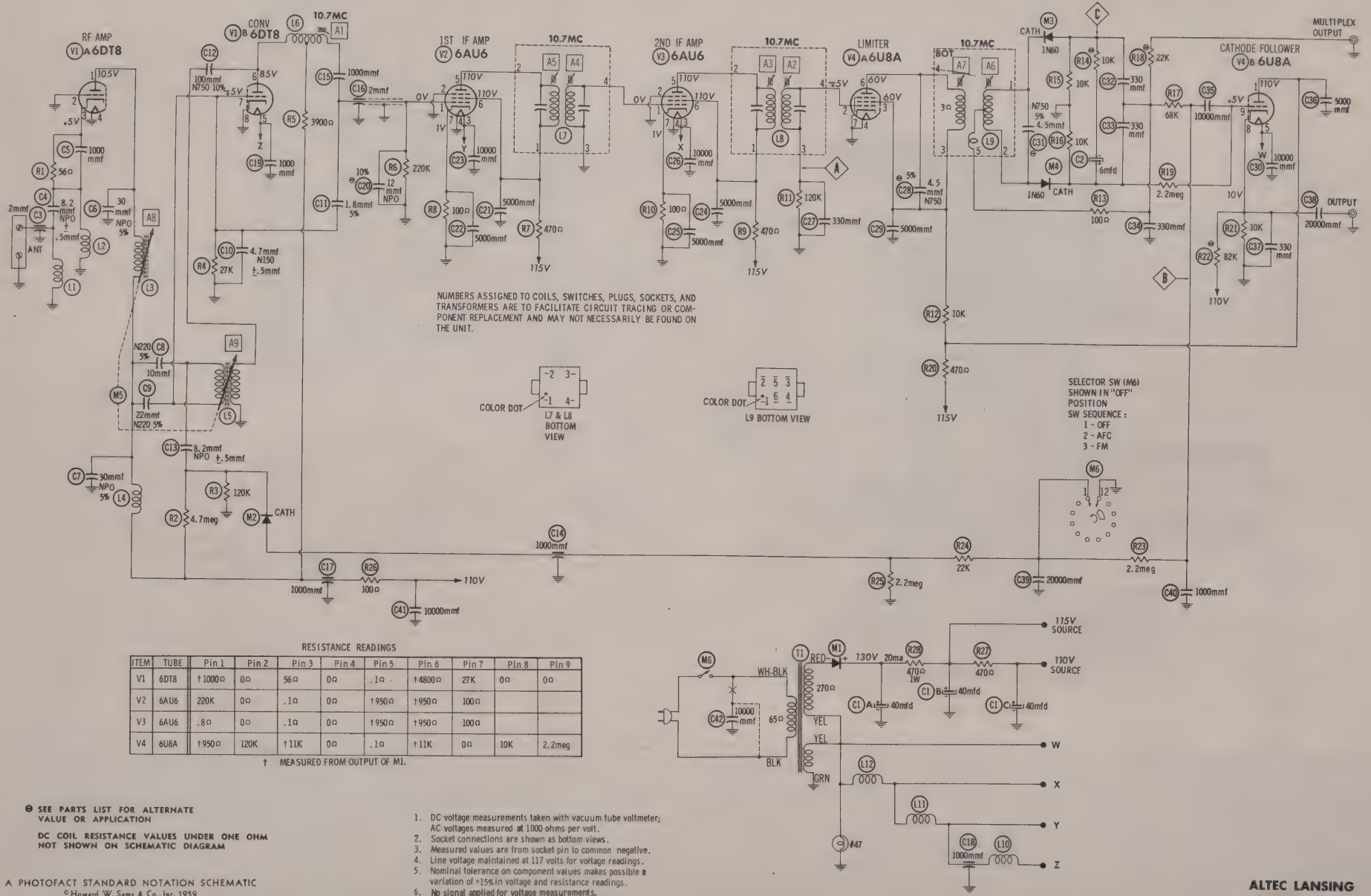


FIG. 2

DIAL CORD STRINGING





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6DT8	†1000Ω	0Ω	56Ω	0Ω	.1Ω	†4800Ω	27K	0Ω	0Ω
V2	6AU6	220K	0Ω	.1Ω	0Ω	†950Ω	†950Ω	100Ω		
V3	6AU6	.8Ω	0Ω	.1Ω	0Ω	†950Ω	†950Ω	100Ω		
V4	6U8A	†950Ω	120K	†11K	0Ω	.1Ω	†11K	0Ω	10K	2.2meg

† MEASURED FROM OUTPUT OF M1.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. No signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALTEC LANSING MODEL 307A

PHOTOFACT* Folder

ARVIN MODEL 1586
(Ch. 1.46500)

ARVIN MODEL 1586
(Ch. 1.46500)

ARVIN MODEL 1586
(Ch. 1.46500)

TRADE NAME	Arvin Model 1586 (Ch. 1.46500)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	AC Operated 4 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 59 Watts, .565 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of J154

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. -Phase Inv.	7199	
V2	Output	6AQ5A	
V3	Output	6AQ5A	
V4	Rectifier	6BW4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A ■	50	300	43711-6		XB0254 †	TCD2274		TVLS-2578.8*	
B ▲	40	300							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use printed circuit adapters #55277 & 55278.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	560				DI-560	DD-561	L10T56	B-356	5GA-T56	
C3	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C4	560				DI-560	DD-561	L10T56	B-356	5GA-T56	Note 1
C5	.22	200			P288N-22		CUB2P22	GEM-2022	2TM-P22	
C6	50000				BPD-05	DF-503	CUB6S5	GEM-615	5HK-S5	
C7	.33	100			P288N-33		PM4P33	GTM1033	2WF-P33	
C8	4700				BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C9	4700				BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C10	2.2					TCZ-2R2	C10V22C	CNO-522	5TCCB-V22	

Note 1. Some versions may use 470mmf in this application.

CONTROLS

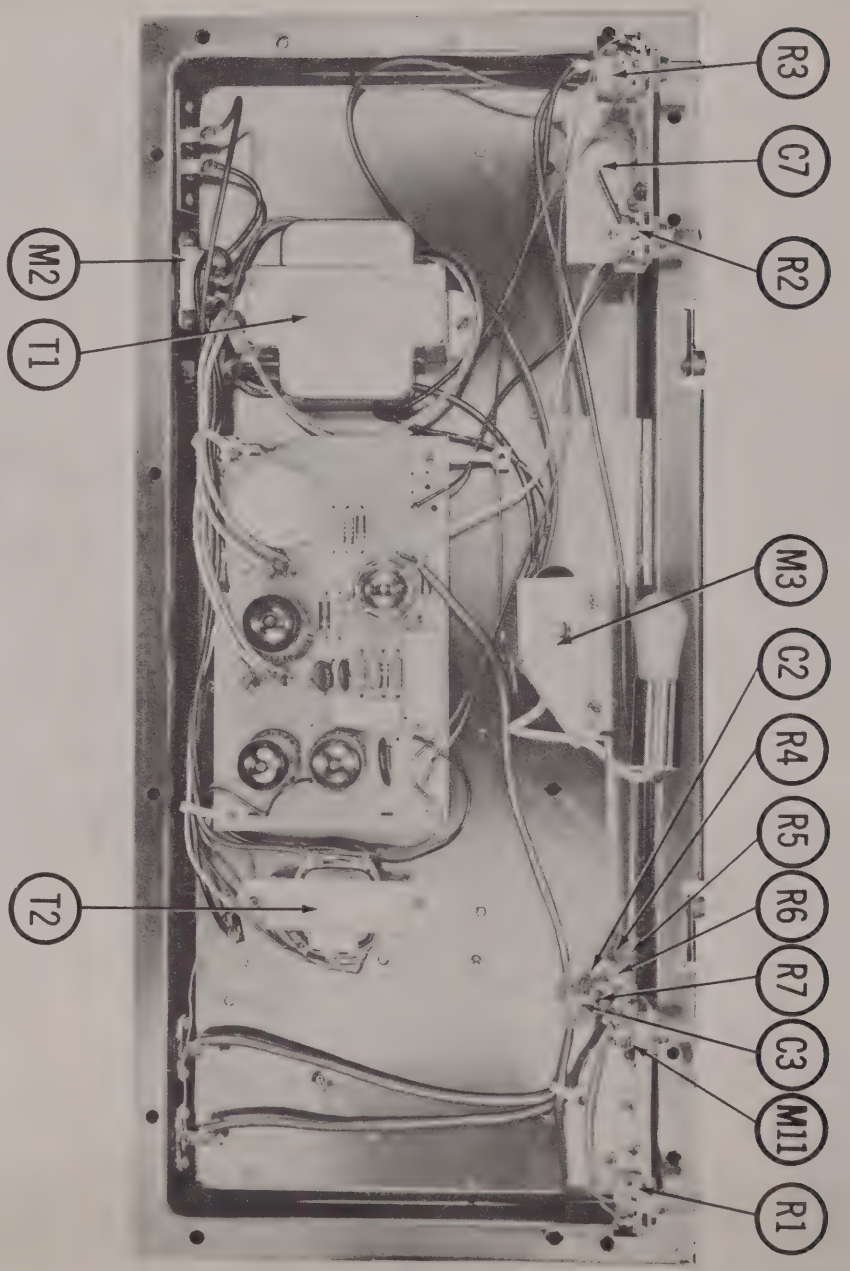
ITEM No.	RATING RESISTANCE	RATING WATTS	ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	44500-21	B-85	A47-3meg-Z	Q13-140	U57	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	750Ω	½	44500-23	B-415	A47-750-S	Q17-105	U-3	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	100K	½	44500-22	B-41	A47-100K-Z	Q13-128	U-39	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power On-Off

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ARVIN PART No.	NOTES
R4	220K			
R5	1meg			
R6	470K			
R7	470K			
R8	470K			
R9	2.2meg			
R10	4700Ω			
R11	68K			
R12	470K			
R13	4700Ω			
R14	470K			
R15	180Ω	2	44448-8	
R16	1meg			
R17	2200Ω			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	ARVIN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .52A	560 VCT @.075A	6.3V@ 2.1A	46251-2						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ARVIN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6500Ω CT	6-8Ω	46131-1	24S61	A-2901	AU-600	A-3823	24S61	S-53X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	46129	4A1TZ6.7	
SP2	5"x 7"	PM	6-8Ω	46130	57A21Z6.3	

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	Switch	46165-2	Function
M2	Switch	25525	Speaker (SPDT, Slide Type)
M3	Switch	46449-1	Interlock

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

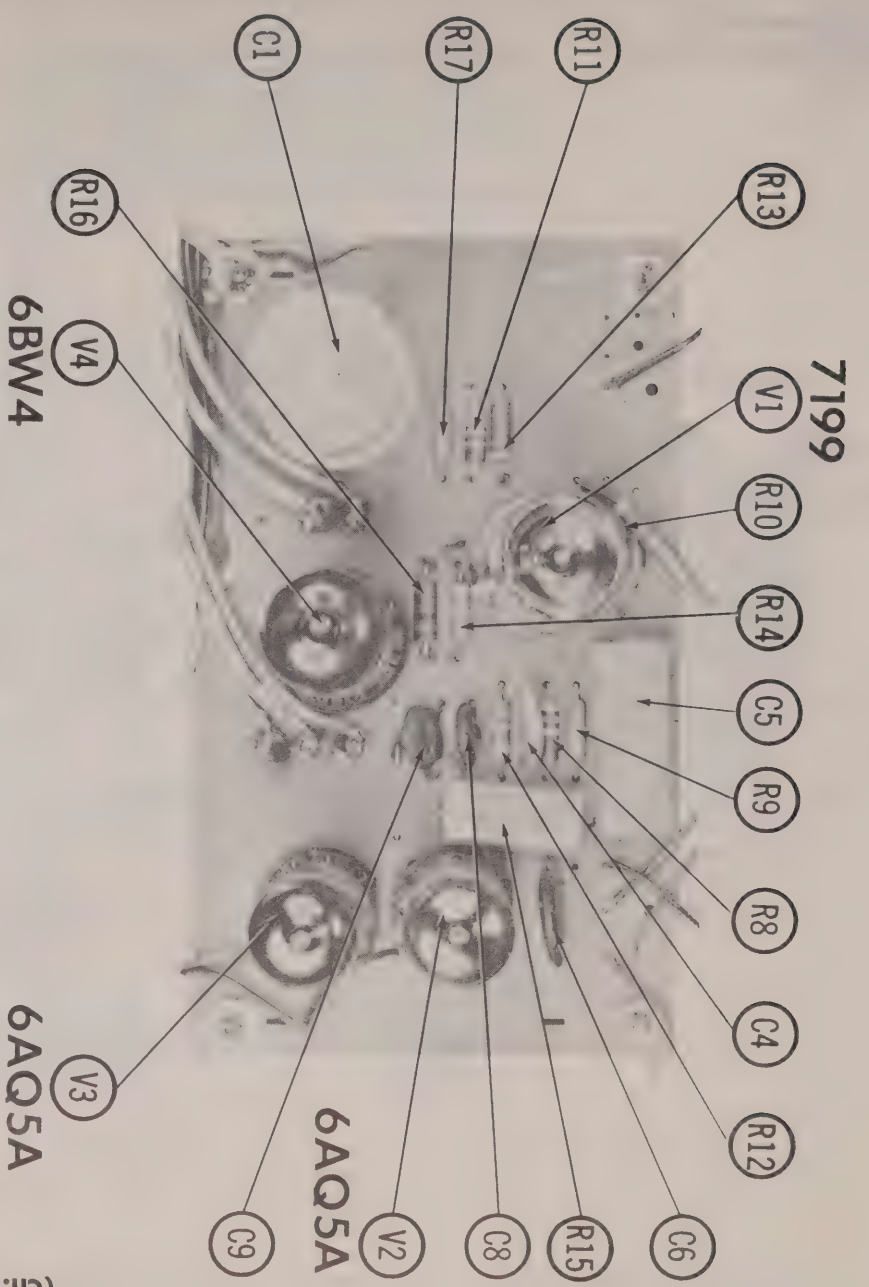
NAME	PART NO.	DESCRIPTION
Knob	45891-29	Black
Cabinet Base	46427-79	Gray
Cabinet Top	45842-29	Black

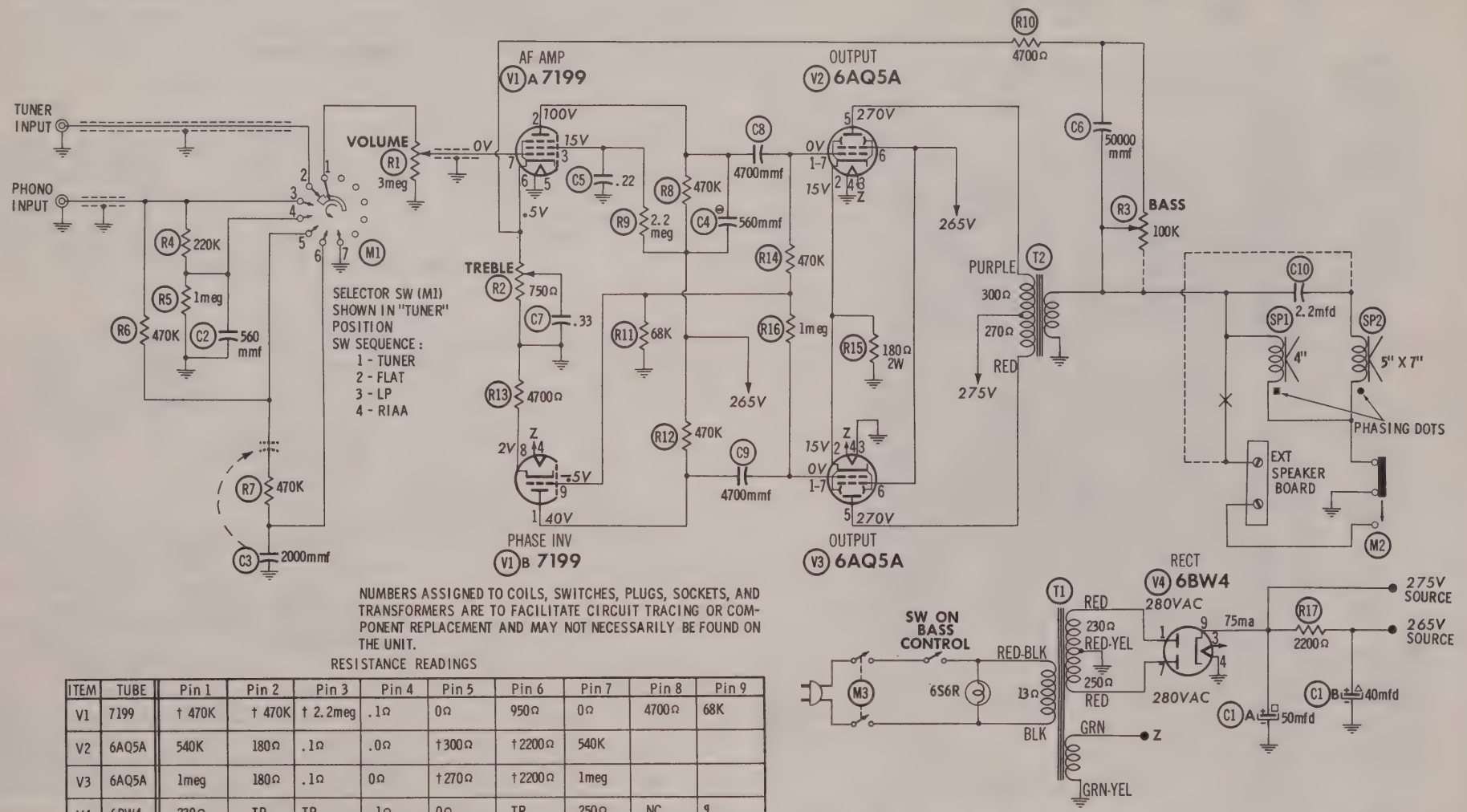
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors.

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

PRINTED BOARD





NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7199	† 470K	† 470K	† 2.2meg	.1Ω	0Ω	950Ω	0Ω	4700Ω	68K
V2	6AQ5A	540K	180Ω	.1Ω	.0Ω	†300Ω	†2200Ω	540K		
V3	6AQ5A	1meg	180Ω	.1Ω	0Ω	†270Ω	†2200Ω	1meg		
V4	6BW4	230Ω	TP	TP	.1Ω	0Ω	TP	250Ω	NC	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 9 OF V4.
TP TIE POINT
NC NO CONNECTION

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ARVIN MODEL 1586
(Ch. 1.46500)

PHOTOFACT* Folder

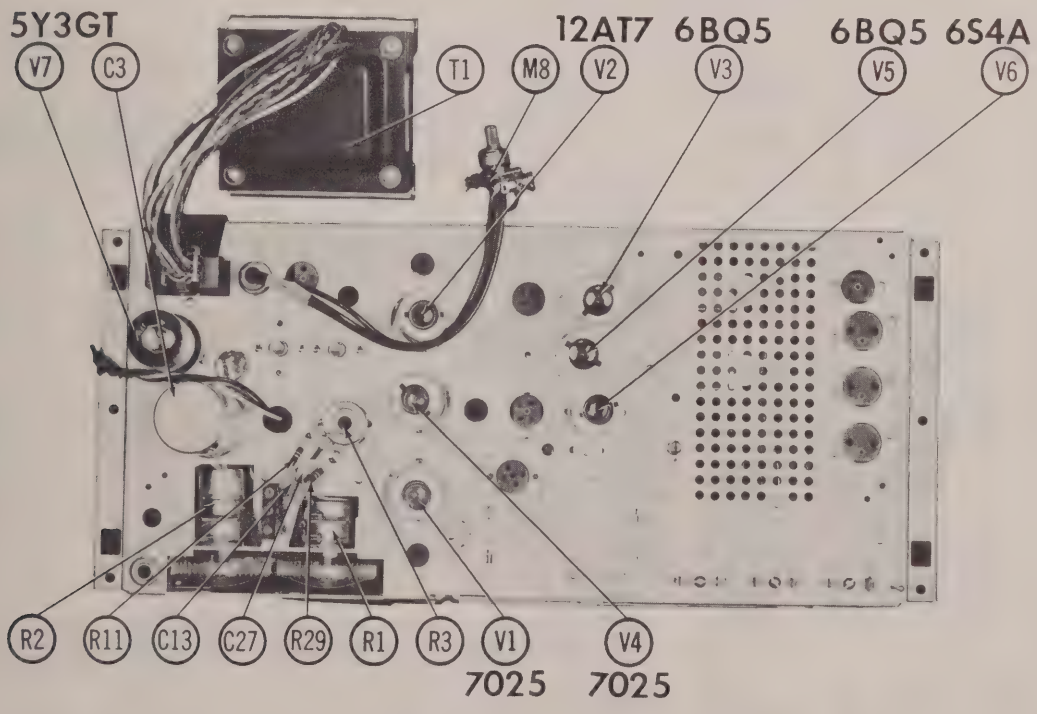
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

BELL & HOWELL
MODELS 600-B, -L, -M

BELL & HOWELL
MODELS 600-B, -L, -M

TRADE NAME	Bell & Howell Models 600B, 600L, 600M
MANUFACTURER	Bell & Howell Co., 7100 McCormick Road, Chicago 45, Illinois
TYPE SET	AC Operated 7 Tube Record-Playback Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 86 Watts, .82 Amp. @ 117 Volts Ac (Amp. Only)

FOR SERVICE INFORMATION ON TAPE TRANSPORT - SEE BELL & HOWELL MODEL 300 - PHOTOFACT SET 320 FOLDER 4



BELL & HOWELL
MODELS 600-B, -L, -M

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

J84

SET 449 FOLDER 6

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Left Channel AF Amp.	7025	12AX7 *
V2	Left Channel AF Amp. - Right Channel AF Amp.	12AT7	
V3	Left Channel Output	6BQ5	
V4	Right Channel AF Amp.	7025	12AX7 *
V5	Right Channel Output	6BQ5	
V6	Bias Oscillator	6S4A	
V7	Rectifier	5Y3GT	

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Bell & Howell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	200	701222	PRS450V5030	7V4125	TCD2302		TVAS-2495*	
B	40	200							
C2	40	450	800985	PRS450V40	BR4045	TC78	TD-40-450	TVA-1712	
C3A	■20	450	701682	AFH4-14	D0130	FP444	TMQ-12	TVL-4763	
B	▲20	450							
C	▰20	450							
D	20	450							
C4	20	350	701698	PRS450V20	BR2035	TC65	TD-20-350	TVA-1608	
C5	25	50	701693	PRS50V25	BBR25-50	TC36	TD-25-50	TVA-1306	
C6	25	50	701693	PRS50V25	BBR25-50	TC36	TD-25-50	TVA-1306	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

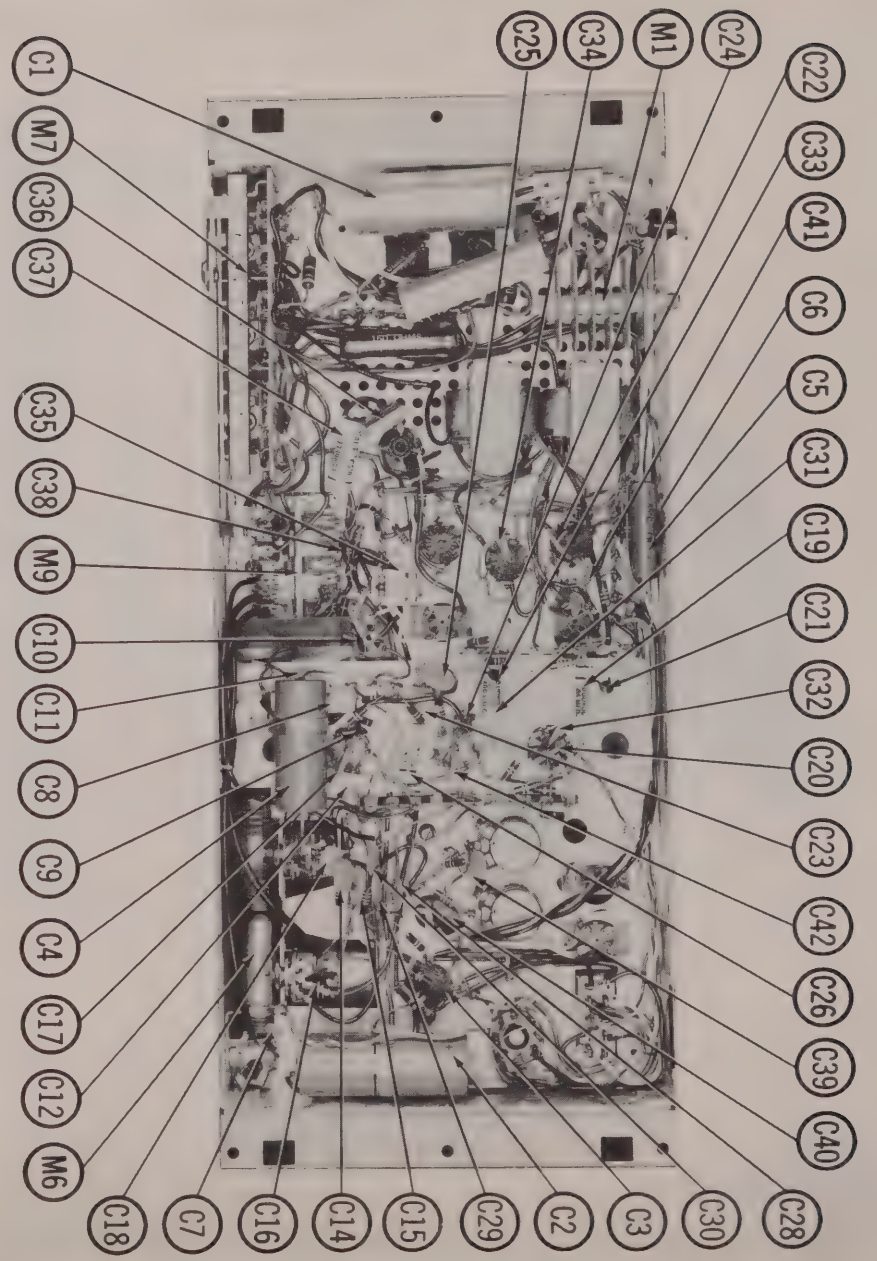
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	Bell & Howell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	20		NPO 10%	800791	NPO-DI 20	DTZ-20	C10Q2C	CNO-420	5TCC-Q2S 10%*	
C8	.02	200		701703	P288N-02	DD-203	CUB2S2	GEM-412	2TM-S2	
C9	150			701815	BPD-00015	DD-151	L10T15	B-315	5GA-T15	
C10	250			701816	BPD-00025	DD-251	L10T25	B-325	5GA-T25	
C11	3300		10%	800979	DI-3300			JL-233	5GA-D33S 10%*	
C12	.01	400		701694	P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C13	20000			701679	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C14	3300		10%	800979	DI-3300			JL-233	5GA-D33S 10%*	
C15	3300		10%	800979	DI-3300			JL-233	5GA-D33S 10%*	
C16	50		10%	701788	DI-50	DD-500	L10Q5	CNO-450	5GA-Q5S 10%*	
C17	20000			701679	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C18	5000			800980	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C19	.05	400	10%	701680			PM4S5	GEM-1615	5BF-S5	
C20	20000			701679	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C21	150			701815	BPD-00015	DD-151	L10T15	B-315	5GA-T15	
C22	20000			701679	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C23	.02	200		701703	P288N-02	DD-203	CUB2S2	GEM-412	2TM-S2	
C24	150			701815	BPD-00015	DD-151	L10T15	B-315	5GA-T15	
C25	3300		10%	800979	DI-3300			JL-233	5GA-D33S 10%*	
C26	.01	400		701694	P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C27	20000			701679	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C28	3300		10%	800979	DI-3300			JL-233	5GA-D33S 10%*	
C29	3300		10%	800979	DI-3300			JL-233	5GA-D33S 10%*	
C30	5000			800980	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C31	.05	400	10%	701680			PM4S5	GEM-1615	5BF-S5	
C32	20000			701679	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C33	150			701815	BPD-00015	DD-151	L10T15	B-315	5GA-T15	
C34	20000			701679	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C35	25-260			800986						
C36	1000			701742	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C37	.05	400	10%	701680			PM4S5	GEM-1615	5BF-S5	
C38	470			701810	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C39	1500			800990	BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	
C40	1500			800990	BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	
C41	700		10%	701838						
C42	20000			701609	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CHASSIS-BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Bell & Howell PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	800983	BT-65				Volume, Left Channel, Tap ② 160K
B	500K	½		STR-65				Volume, Right Channel, Tap ② 160K
R2A	20K	½	800984	B-26		Q11-120		Tone, Left Channel
B	20K	½		SR-26		M11-120	■ UE3959S	Tone, Right Channel
C	Switch			KR-1		76-1		
R3A	50K	½	99-184 ①	B-31	B47-50K-S	B11-123	PTA54L	Balance
B	Shaft			Not Req.	Not Req.	TM2	Not Req.	
R4A	1000Ω	½	800990	F1-4		† QJ1096	■■ UE3960	Hum Adjust
B	1000Ω	½		R2-4				Hum Adjust
R5A	1000Ω	½	800990	F1-4		† QJ1096	■■ UE3960	Hum Adjust
B	1000Ω	½		R2-4				Hum Adjust

① Some versions may use Part #702002 in this application.
† "Concentrikit" Equivalent: K-6 Kit with base elements & shafts: B11-108, P9-018 (Panel) B11-108, R11-031 (Rear)
(Not available as a factory assembled unit.)

■ "STA-LOC" Equivalent: FA253L, RU253L, OK500, IK937, US-41.
■■ "STA-LOC" Equivalent: FA13L, RU13L, CS3500.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Bell & Howell PART No.	NOTES
R6	1meg		701828	
R7	10Ω		800971	
R8	2.7meg		701990	
R9	220K		701819	
R10	47K		701838	
R11	22K		701820	
R12	220K		701819	
R13	1500Ω		701857	
R14	33K		701840	
R15	1meg		701828	
R16	100K		701826	
R17	1500Ω		701857	
R18	47K		701838	
R19	330K		702001	
R20	220K		701819	Note 1
R21	3.3meg		701883	
R22	680Ω		701831	
R23	10K		800973	
R24	150Ω		800972	
R25	10Ω		800971	
R26	2.7meg		701990	
R27	220K		701819	
R28	47K		701838	
R29	22K		701820	
R30	220K		701819	
R31	1500Ω		701857	

ITEM No.	RATING OHMS	RATING WATT	Bell & Howell PART No.	NOTES
R32	33K		701840	
R33	1meg		701828	
R34	100K		701826	
R35	1500Ω		701857	
R36	47K		701838	
R37	220K		701819	Note 1
R38	3.3meg		701883	
R39	47Ω	1	701950	
R40	10Ω	2	701839	
R41	20Ω	5	800676	
R42	20Ω	5	800676	
R43	20Ω	5	800676	Note 2
R44	50Ω	20	800677	
R45	22K		701820	
R46	22K		701820	
R47	680Ω		701831	
R48	220K		701819	
R49	1meg		701828	
R50	47K		701828	
R51	150Ω	10	701823	
R52	1000Ω	10	800988	
R53	10K	2	701938	
R54	470K		701835	
R55	470K		701835	
R56	10K		701968	
R57	150Ω		800972	

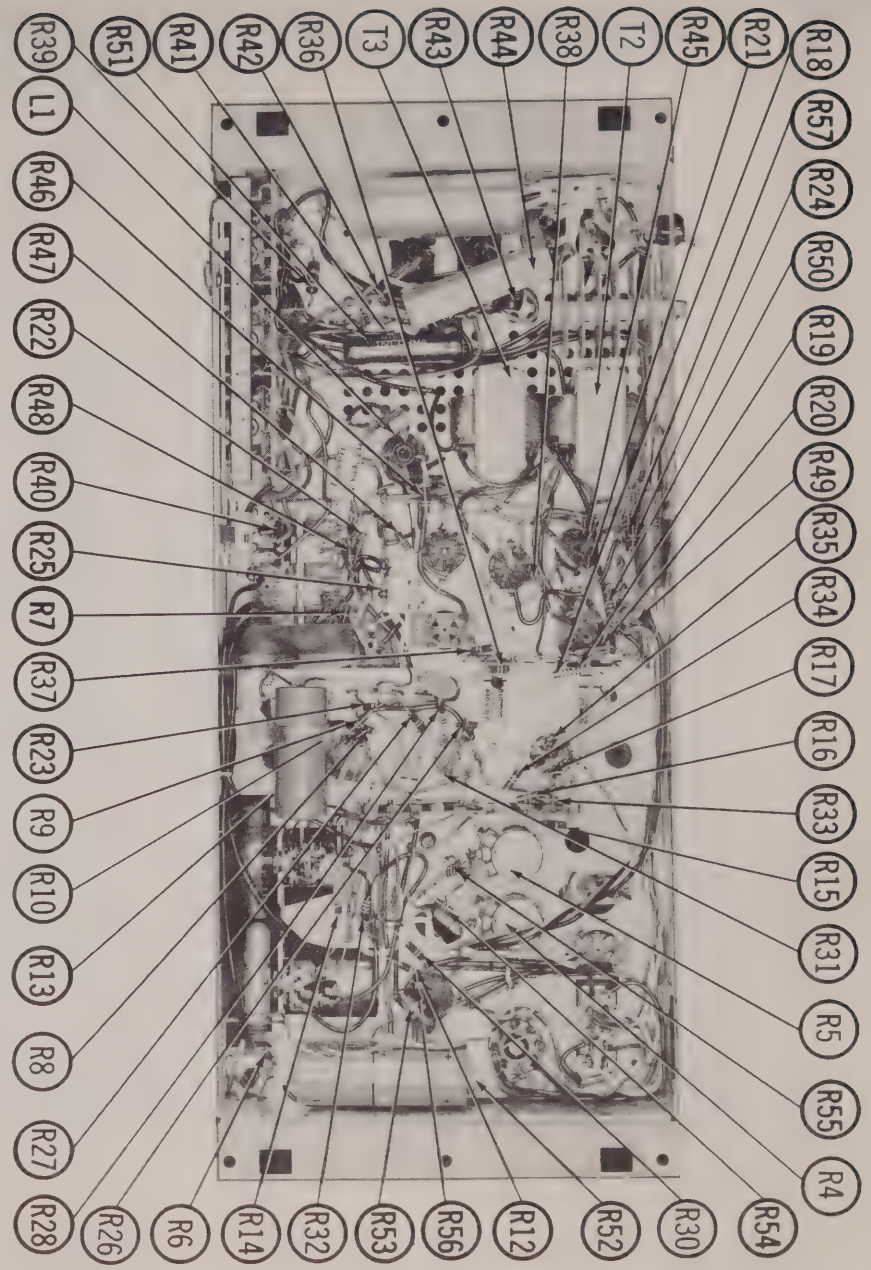
Note 1. Some versions may use 470K in this application (Part #781835).

Note 2. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Bell & Howell PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	800384						

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Bell & Howell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .82A	680VCT @ .100A	5V @ 2A	130-3 ①	24R05	P-2953		PM8410	24R05	R-14B
	SEC. 3	SEC. 4	SEC. 5							
	6.3VCT @ 2.9A									

① Alternate Part #076104.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Bell & Howell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6000Ω	6-8Ω	800898	24S60	A-2900	AU-608	A-3856	24S60	S-51X	Left Channel
T3	6000Ω	6-8Ω	800898	24S60	A-2900	AU-608	A-3856	24S60	S-51X	Right Channel

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Bell & Howell PART No.	QUAM PART No.	
SP1	7½"	PM	8Ω	800301	8A31Z8	Left Channel
SP2	7½"	PM	8Ω	800302	8A31Z8	Right Channel

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Bell & Howell PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.160A	800005 ①	1236AH ① HA504 ②		T300 ①	300A ①	① Selenium Type ② Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	Bell & Howell PART No.	NOTES
M2	Head	076301	Stereo Record, Playback
M3	Erase Head	076367	
M4	Lamp		#NE51, Normal
M5	Lamp		#NE51, Overload
M6	Lamp		#1847
M7	Switch	701075	Record-Playback (Pushbutton Type)
M8	Switch	70103	Stop (SPDT, Rotary Wafer Type)
M9	Switch	701079	Record-Speaker-Play-Rewind-Forward-Stop (Pushbutton Type)
M10	Switch	800976	Monaural-Stereo (Rotary, Wafer Type)
M11	Solenoid	800063	
M12	Motor	701395	Drive
M13	Motor	701416	Supply
M14	Motor	701397	Takeup

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

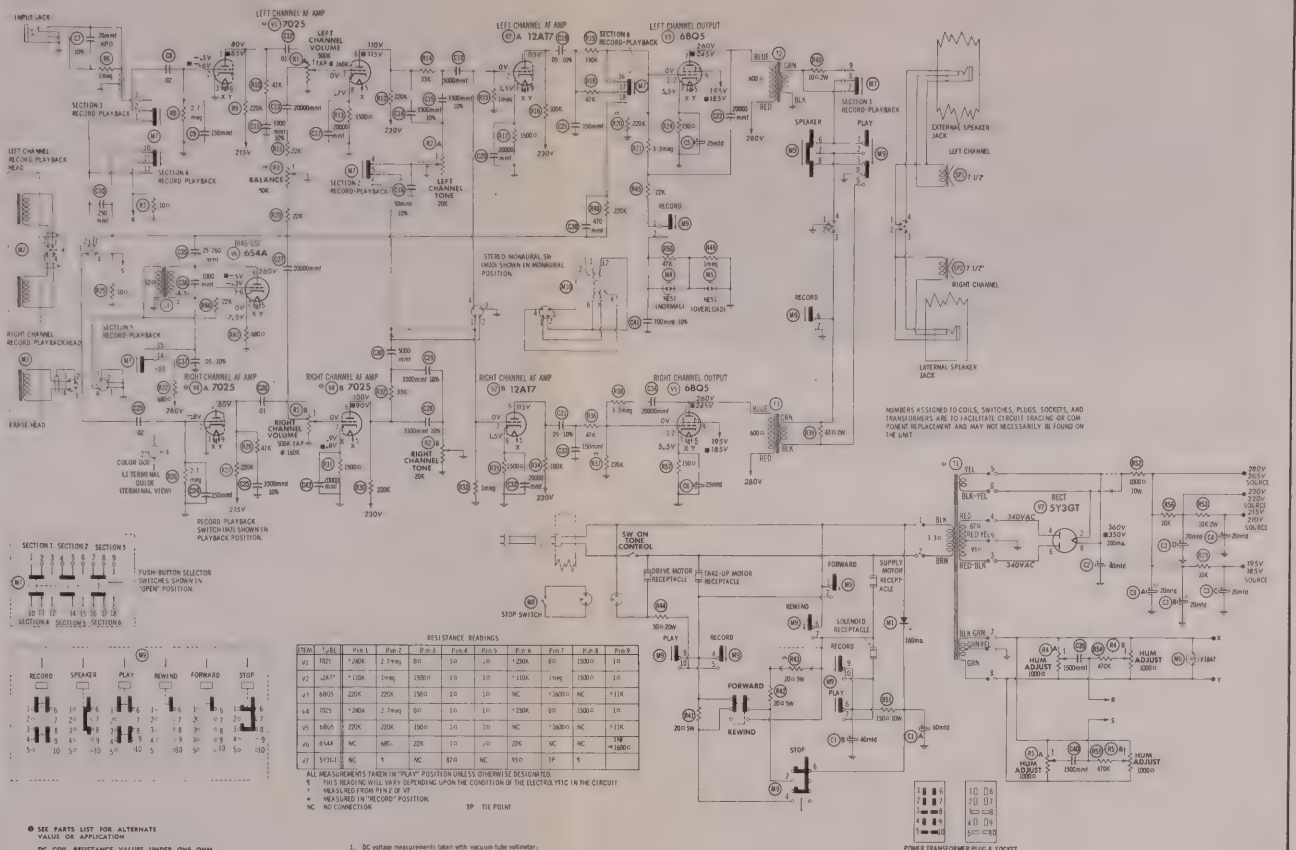
ADJUSTMENTS

HUMBUCKING ADJUSTMENTS (R4, R5)

Connect an AC VTVM or scope across the left speaker. Insert a piece of paper between the guide stud and plunger of automatic stop switch. Switch to "Stereo" and "Play" and turn volume control fully clockwise. Turn outer shaft of bucking control to mid-point. Rotate the inner shaft for minimum indication on VTVM or scope. Readjust outer shaft to further reduce the hum level and then retouch inner shaft. NOTE: As MINIMUM hum level is approached, interaction of the controls becomes critical. Transfer the VTVM or scope connections to the right speaker and repeat procedure to adjust humbucking circuit #2.

BIAS ADJUSTMENT (C35)

Insert a 100Ω non-inductive resistor in series with R7. Connect an AC VTVM across the resistor. Insert a piece of paper between the guide stud and plunger of the automatic stop switch. Depress "Record" button and turn volume to minimum. Adjust C35 for a reading of .13-.14 Volts (bias current 1.3-1.4MA).


INPUT JACK
LEFT CHANNEL AF AMP V4 7025
LEFT CHANNEL VOLUME 500K 1 TAP @ 340K
SECTION 1 RECORD-PLAYBACK
LEFT CHANNEL RECORD-PLAYBACK HEAD
SECTION 4 RECORD-PLAYBACK
BALANCE 10K
SECTION 2 RECORD-PLAYBACK
LEFT CHANNEL TONE 20K
LEFT CHANNEL AF AMP V7 A 12AT7
SECTION 6 RECORD-PLAYBACK
LEFT CHANNEL OUTPUT V3 6BQ5
SECTION 3 RECORD-PLAYBACK
SPEAKER
PLAY
EXTERNAL SPEAKER JACK
LEFT CHANNEL
RIGHT CHANNEL
BIAS OSC V6 6S4A
RECORD
STEREO MONAURAL SW (MODE SHOWN IN MONAURAL POSITION)
RIGHT CHANNEL RECORD-PLAYBACK HEAD
SECTION 5 RECORD-PLAYBACK
ERASE HEAD
RIGHT CHANNEL AF AMP V4 B 7025
RIGHT CHANNEL VOLUME 500K TAP @ 160K
RIGHT CHANNEL TONE 20K
RIGHT CHANNEL AF AMP V2 B 12AT7
RIGHT CHANNEL OUTPUT V5 6BQ5
COLOR CODE LI TERMINAL GUIDE (TERMINAL VIEW)
RECORD PLAYBACK SWITCH (NOT SHOWN IN PLAYBACK POSITION)
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
SECTION 1 SECTION 2 SECTION 3
PUSH-BUTTON SELECTOR SWITCHES SHOWN IN "OPEN" POSITION
SECTION 4 SECTION 5 SECTION 6
RECORD SPEAKER PLAY REWIND FORWARD STOP
SW ON TONE CONTROL
DRIVE MOTOR RECEPTACLE
TAKE-UP MOTOR RECEPTACLE
SUPPLY MOTOR RECEPTACLE
STOP SWITCH
FORWARD
REWIND
PLAY
RECORD
SOLENOID RECEPTACLE
RECT V7 5Y3GT
HUM ADJUST
POWER TRANSFORMER PLUG & SOCKET TERMINAL GUIDE

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	*240K	2 meg	0Ω	1Ω	.1Ω	*250K	0Ω	1500Ω	1Ω
V2	12AT7	*110K	1meg	1500Ω	1Ω	1Ω	*110K	1meg	1500Ω	1Ω
V3	6BQ5	220K	220K	150Ω	1Ω	1Ω	NC	*160Ω	NC	*11K
V4	7025	*240K	2 meg	0Ω	1Ω	1Ω	*250K	0Ω	1500Ω	1Ω
V5	6BQ5	220K	220K	150Ω	1Ω	1Ω	NC	*160Ω	NC	*11K
V6	6S4A	NC	68Ω	22K	1Ω	.1Ω	22K	NC	NC	INF →160Ω
V7	5Y3GT	NC	¶	NC	87Ω	NC	95Ω	TP	¶	

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
* MEASURED FROM PIN 2 OF V7
∞ MEASURED IN "RECORD" POSITION
NC NO CONNECTION
TP TIE POINT

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings
6. All controls at minimum, proper output load connected

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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BELL & HOWELL
MODELS 600-B, -L, -M

PHOTOFACT* Folder

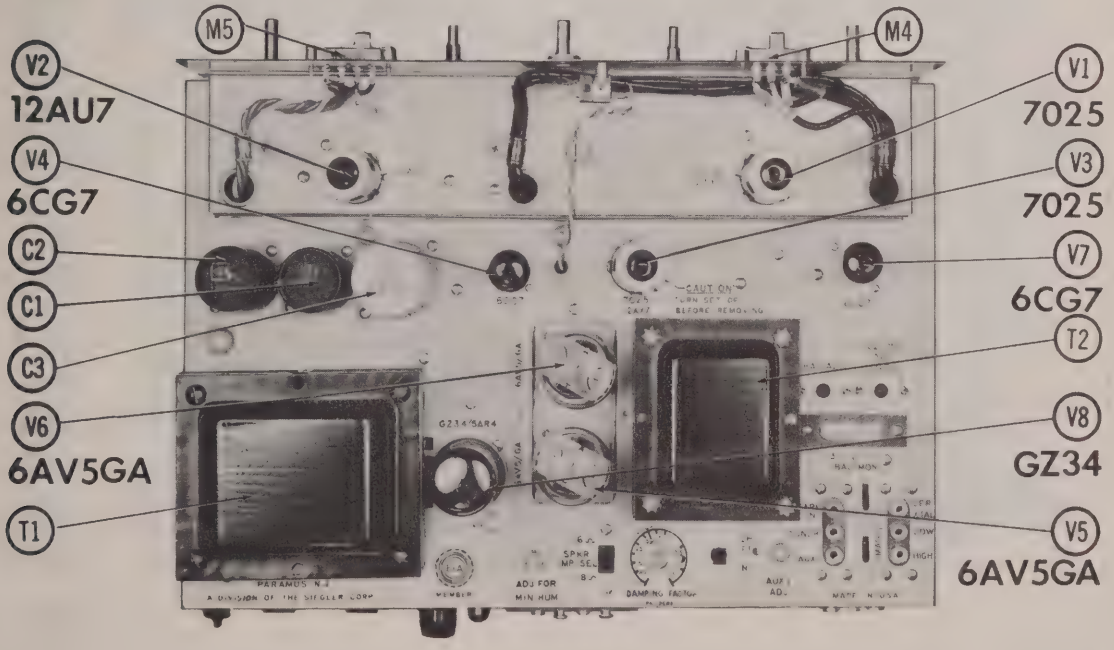
EIA ELECTRONIC INDUSTRIES ASSOCIATION MEMBER

DAVID BOGEN
MODEL DB130-A

DAVID BOGEN
MODEL DB130-A

TRADE NAME	David Bogen Model DB130-A
MANUFACTURER	David Bogen Co., P. O. Box 500, Paramus, N. J.
TYPE SET	AC Operated 8 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 74 Watts, .73 Amp. @ 117 Volts AC (No Signal)

DAVID BOGEN
MODEL DB130-A



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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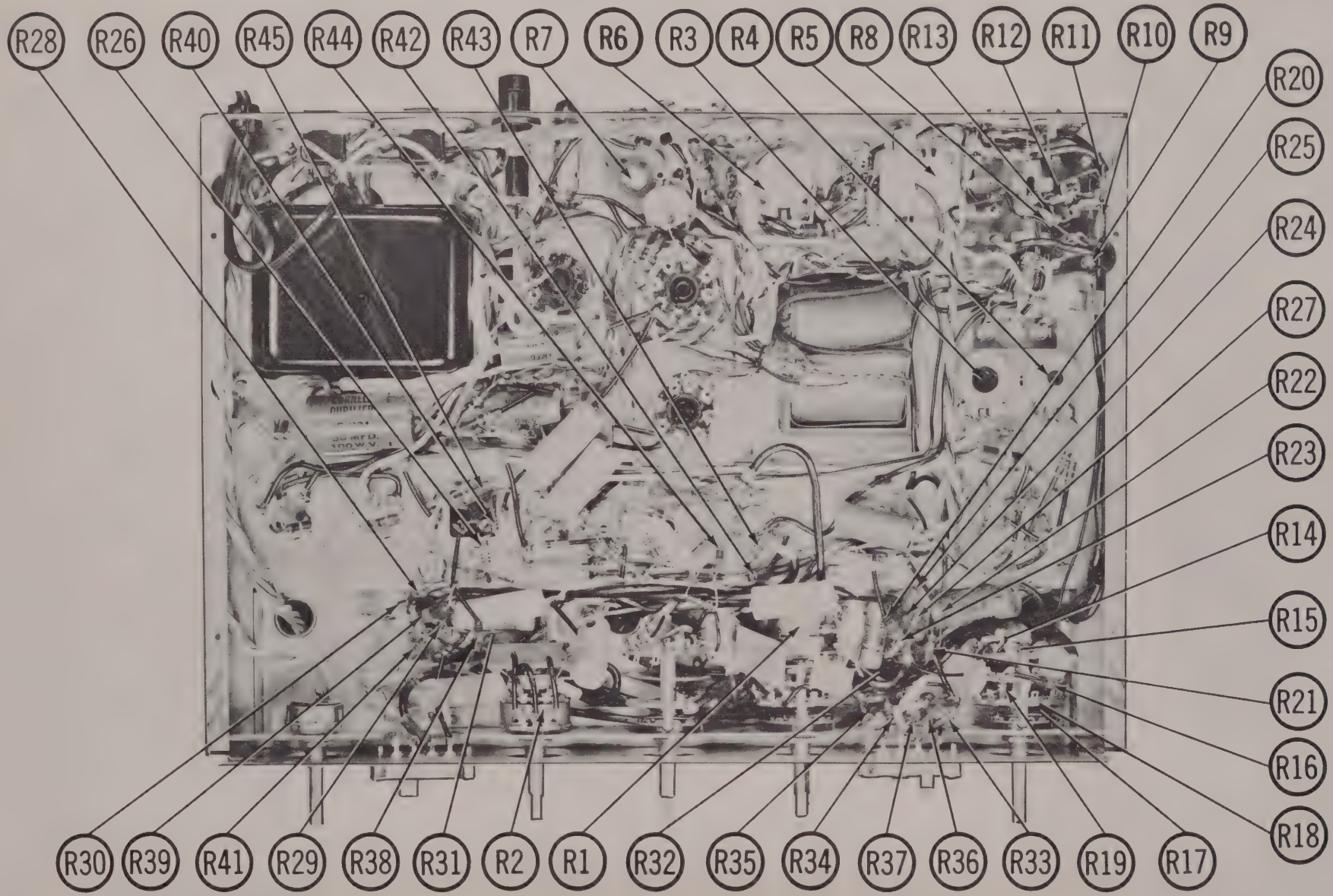
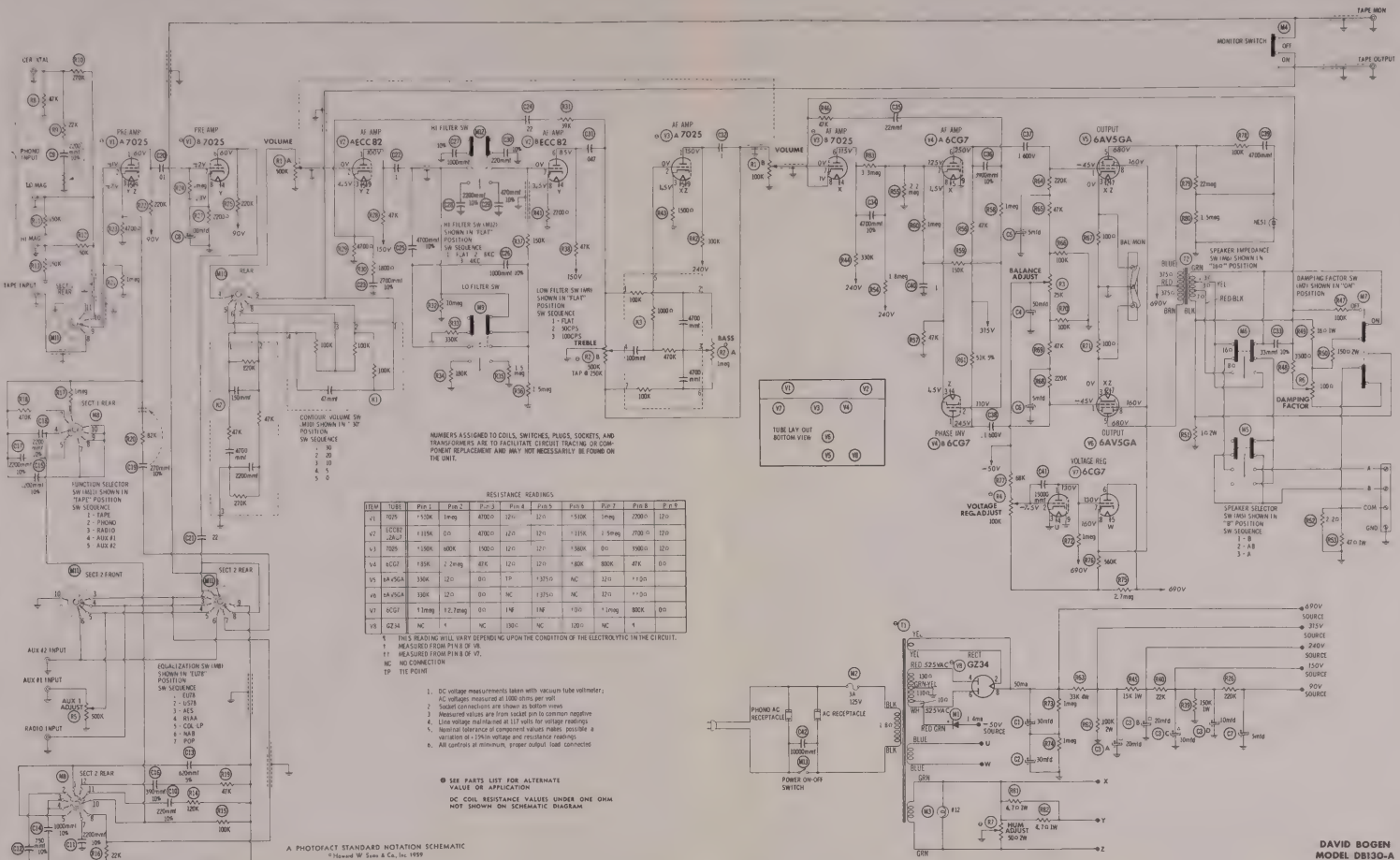
J36

SET 449 FOLDER 7



CHASSIS BOTTOM VIEW — RESISTOR IDENT. (R1-R45)



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	↑150K	1meg	4700Ω	12↑	12Ω	↑510K	1meg	2200Ω	12Ω
V2	ECC82 (12AU7)	↑115K	0Ω	4700Ω	12Ω	12Ω	↑115K	1.5meg	2700Ω	12Ω
V3	7025	↑150K	600K	1500Ω	12Ω	12↑	↑360K	0Ω	1500Ω	12Ω
V4	6CG7	↑85K	2.2meg	43K	12Ω	12Ω	↑80K	800K	47K	0Ω
V5	6AV5GA	330K	12Ω	0Ω	TP	↑375Ω	NC	12Ω	↑↑0Ω	
V6	6AV5GA	330K	12Ω	0Ω	NC	↑375Ω	NC	12Ω	↑↑0Ω	
V7	6CG7	↑1meg	↑2.7meg	0Ω	1MF	1MF	↑0Ω	↑1meg	800K	0Ω
V8	GZ34	NC	↑	NC	130Ω	NC	12Ω	NC	↑	

↑ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 8 OF V8.
↑↑ MEASURED FROM PIN 8 OF V7.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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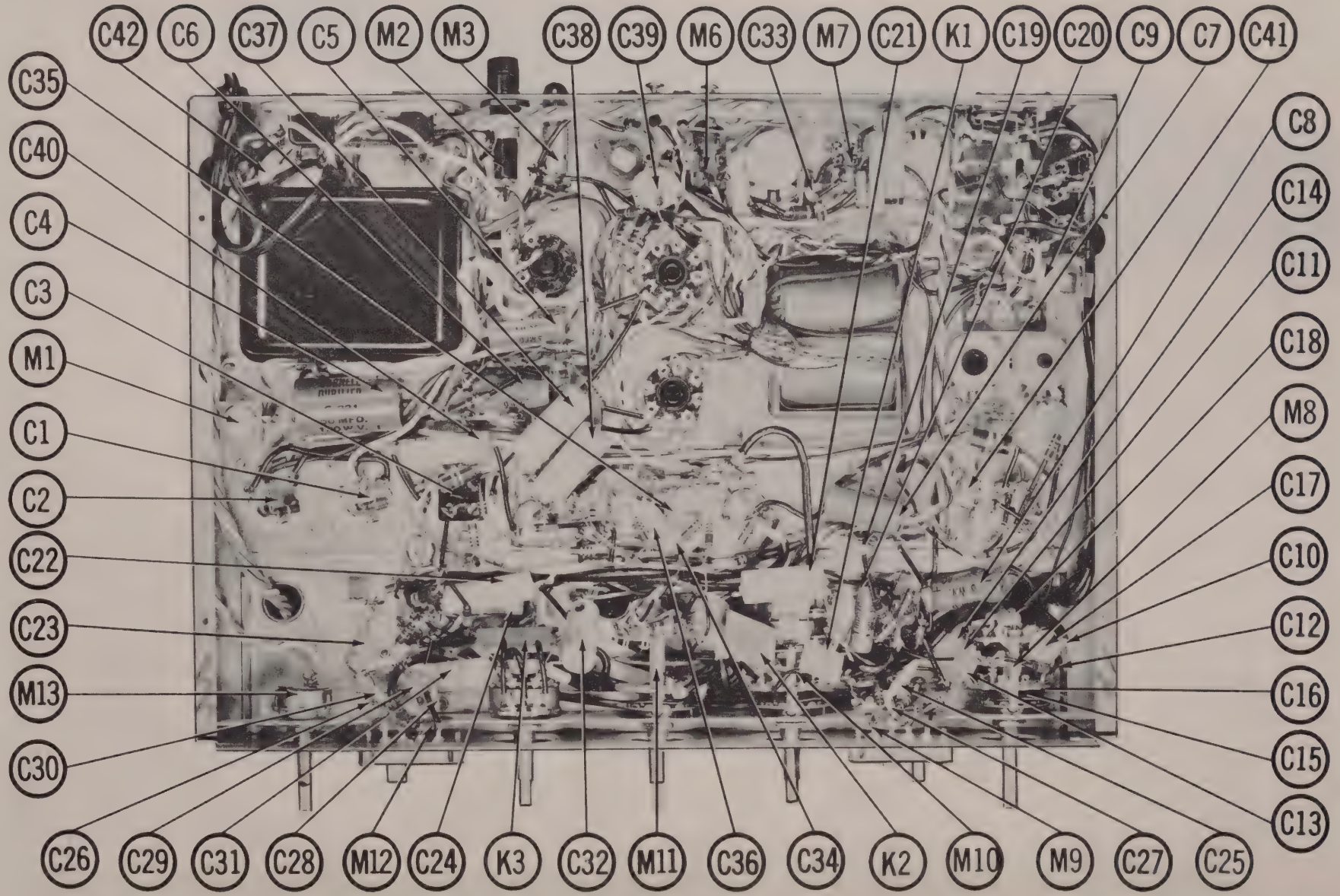
DAVID BOGEN
MODEL DB130-A

CHASSIS BOTTOM VIEW— RESISTOR IDENT. (R47-R83)

FOLDER 7



CHASSIS BOTTOM VIEW — CAPACITOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	7025	12AX7*
V2	AF Amplifier	ECC82	12AU7*
V3	AF Amplifier	7025	12AX7*
V4	AF Amp. -Phase Inv.	6CG7	

ITEM No.	USE	TYPE	NOTES
V5	Output	6AV5GA	
V6	Output	6AV5GA	
V7	Voltage Regulator	6CG7	
V8	Rectifier	GZ34	5AR4*

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	David Bogen PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	30	400	79-010-002	AFH1-51	A0470	FP145	TMS-56	TVL-1720	
C2	30	400	79-010-002	AFH1-51	A0470	FP145	TMS-56	TVL-1720	
C3A	▲20	450	79-010-001	AFH4-19-10	D0179-3	FP474.5	TMQ-11	TVL-4832	
B	■20	450					TD-10-450		
C	▲10	350							
D	10	350							
C4	50	100	79-001-066	PRS150V50	BR5015	TC49	TD-50-150	TVA-1414	
C5	5	200	79-001-086	PRS250V4	BBR4-250	TC50X	TD-4-450	TVA-1501	
C6	5	200	79-001-086	PRS250V4	BBR4-250	TC50X	TD-4-450	TVA-1501	
C7	5	200	79-001-086	PRS250V4	BBR4-250	TC50X	TD-4-450	TVA-1501	
C8	100	6	79-001-026	PRS6V100	BBR100-6	TT6X100	TD-100-6	TVA-1101	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C9	2200		10%		DI-2200			JL-222	5GA-D22S 10%*	
C10	220		10%		DI-220	D6-221	L10T22	JL-322	5GA-T22S 10%*	
C11	2200		10%		DI-2200			JL-222	5GA-D22S 10%*	
C12	750		10%		DI-750			JL-375	5GA-T75S 10%*	
C13	620		5%						5GA-T62S 5%*	
C14	1000		10%		DI-1000			JL-210	5GA-D1S 10%*	
C15	1200		10%		DI-1200			JL-212	5GA-D12S 10%*	
C16	390		10%		DI-390	D6-391	L10T39	JL-339	5GA-T39S 10%*	
C17	2200		10%					JL-222	5GA-D22S 10%*	
C18	2200		10%		DI-2200			JL-222	5GA-D22S 10%*	
C19	270		10%		DI-270	D6-271	L10T27	JL-327	5GA-T27S 10%*	
C20	.01	200			P488N-01	DD-103	CUB2S1	GEM-211	2TM-S1	
C21	.22	200			P288N-22		CUB2P22	GEM-2022	2TM-P22	
C22	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C23	2700		10%		DI-2700			JL-227	5GA-D27S 10%*	
C24	.22	200			P288N-22		CUB2P22	GEM-2022	2TM-P22	
C25	4700		10%		DI-4700			JL-247	5GA-D47S 10%*	
C26	1000		10%		DI-1000			JL-210	5GA-D1S 10%*	
C27	1000		10%		DI-1000			JL-210	5GA-D1S 10%*	
C28	2200		10%		DI-2200			JL-222	5GA-D22 10%*	
C29	470		10%		DI-470	D6-471		JL-347	5GA-T47 10%*	
C30	220		10%		DI-220	D6-221	L10T22	JL-322	5GA-T22 10%*	
C31	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C32	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C33	33		10%		DI-33	DD-330	L10Q33	CNO-433	5GA-Q33S 10%*	
C34	4700		10%		DI-4700			JL-247	5GA-D47S 10%*	
C35	22				DI-22	DD-220	L10Q22	CNO-422	5GA-Q22	
C36	3900		10%		DI-3900			JL-239	5GA-D39S 10%*	
C37	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C38	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C39	4700				DI-4700		BYA10D47	JL-247	5HK-D47	
C40	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C41	15000				BPD-015		BYA10S15	B-115	5HK-S15	
C42	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	David Bogen PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	14458-5	AB-59		Q11-133 *		Volume
B	100K	½		SR-40		M11-133 *		Volume
C	Shaft			AK-1				
R2A	1meg	½	V371 (A)	F1-51			††	Bass Note 1
B	500K	½		R2-46				Treble Tap @ 250K Note 1
R3A	25K	½	77-001-410	B-26	B47-25K-S	B11-120	TA253L	Balance Adjust
B	Shaft			Not Req.	Not Req.	SK5 Kit	Not Req.	
R4A	100K	½	V392 (A)	AB-40	B47-100K-S	B11-128	TA15L	Voltage Reg. Adjust. Note 2
B	Shaft			AK-1	Not Req.	TM-1 Kit	Not Req.	
R5A	500K	½	77-001-275	B-60	A47-500K-Z	Q13-133	U48	Aux. 1. Adjust
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R6A	100Ω	½	77-001-388	WN-101	A43-100	W11-084	U1	Damping Factor
B	Shaft			Not Req.	FKS-1/4	SK5 Kit	Not Req.	
R7A	50Ω	2(ww)	V113A	WN-500	A43-50	W11-050	R50L	Hum Adjust Note 3
B	Shaft			Not Req.	FKS-1/4	SK-5 Kit	Not Req.	

†† "STA-LOC" equivalent: FA16L, RU55-T254, CS3500
* Use extra mounting nut
Note 1. Alternate part #77-001-371
Note 2. Alternate part #77-001-392
Note 3. Alternate part #77-001-113

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		David Bogen PART No.	NOTES
	OHMS	WATT		
R8	47K			
R9	22K			
R10	270K			
R11	150K			
R12	150K			
R13	150K			
R14	120K			
R15	100K			
R16	22K			
R17	1meg			
R18	470K			
R19	47K			
R20	82K			
R21	1meg			
R22	220K			
R23	4700Ω			
R24	1meg			
R25	220K			
R26	220K			
R27	2200Ω			
R28	47K			
R29	4700Ω			
R30	1800Ω			
R31	39K			
R32	10meg			
R33	330K			
R34	180K			
R35	1.5meg			
R36	1.5meg			
R37	150K			
R38	47K			
R39	150K	1		
R40	22K			
R41	2700Ω			
R42	100K			
R43	1500Ω			
R44	330K			
R45	15K	1		

ITEM No.	RATING		David Bogen PART No.	NOTES
	OHMS	WATT		
R46	47K			
R47	100K			
R48	3300Ω			
R49	18Ω	1		
R50	150Ω	2		
R51	1Ω	2		
R52	2.2Ω			
R53	47Ω	1		
R54	1.8meg			
R55	2.2meg			
R56	47K			
R57	47K			
R58	1meg			
R59	150K			
R60	1meg			
R61	51K 5%			
R62	100K	2		
R63	33K	4		
R64	220K			
R65	47K			
R66	100K			
R67	100Ω			
R68	220K			
R69	47K			
R70	100K			
R71	100Ω			
R72	1meg			
R73	1meg			
R74	1meg			
R75	2.7meg			
R76	560K			
R77	68K			
R78	100K			
R79	22meg			
R80	1.5meg			
R81	4.7Ω	1		
R82	4.7Ω	1		
R83	3.3meg			

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	David Bogen PART No.	REPLACEMENT DATA
K1	Loudness Tone Comp.	47mmf, 100K, 100K, 100K	78-901-001	
K2	Loudness Tone Comp.	150mmf, 2200mmf, 47K, 47K, 220K, 270K, 4700mmf	78-902-001	
K3	Treble & Bass Comp.	100mmf, 4700mmf, 4700mmf, 100K, 100K, 470K, 1000Ω	78-900-001	Centralab PC-190 Sprague TCS-16

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1		David Bogen PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .73A	1050 VCT @ .050A	Tap @ 45V @ .0014A	T-3137-1 ①						
	SEC. 2	SEC. 3	SEC. 4							
	5V @ 3A	6.3V @ .6A	6.3V @ 4.1A							

① Alternate Part #83-523-000

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	David Bogen PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10K CT	16Ω Tap @ 8Ω, 4Ω	83-231-000							

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	David Bogen PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.0014A	H373①	1159①	D-5410①	10①		① Selenium Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			David Bogen PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	3A 125V S/B			313003. (3AG 3A 125V S/B)	342012	MDX3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	David Bogen PART No.	NOTES
M3	Lamp		#12
M4	Switch	81-003-002	Monitor On-Off, SPDT (Slide Type)
M5	Switch	81-003-001	Speaker A-AB-B, 3P3T (Slide Type)
M6	Switch	S381A	Speaker Impedance 8Ω-16Ω, 3PDT (Slide Type)
M7	Switch	S476A	Damping Factor On-Off, DPDT (Slide Type)
M8	Switch	81-001-467	Equalization, 7 Position (Rotary Wafer Type)
M9	Switch	81-003-001	Lo Filter, 3P3T (Slide Type)
M10	Switch	81-001-469	Contour-Volume, 5 Position (Rotary Wafer Type)
M11	Switch	81-001-468	Selector, 5 Position (Rotary Wafer Type)
M12	Switch	81-003-001	Hi Filter, 3P3T (Slide Type)
M13	Switch	81-006-001	Power On-Off, SPST (Rotary Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

ADJUSTMENTS

This adjustment should be necessary only if the 6CG7 (V7), or 6AV57A tubes (V5 or V6) are replaced.

1. Turn the Volt. Reg. Adj. (R4) and the Balance Adjust (R3) fully counterclockwise.
2. Allow a 5 minute warm-up period.
3. Turn volume fully counterclockwise.
4. Remove both shorting straps from the Bal. Mon. terminal strip.
5. Set VTVM to lowest scale and connect DC probe to Bal. Mon. terminal 1, common to terminal 2.
6. Adjust Volt. Reg. Adj. for 1 volt reading.
7. Move common probe from terminal 2 to 3. Adjust Balance Adjust for zero volts.
8. Repeat steps 5, 6, and 7 until a 1 volt reading is obtained between 1 and 2, and zero volts between 1 and 3.
9. Replace the shorting straps on Bal. Mon. strip 1 to 2 and 2 to 3.

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

FORD MODEL 94BT (B9C-18805-A1)

FORD MODEL 94BT (B9C-18805-A1)

TRADE NAME	Ford Model 94BT (B9C-18805-A1) For 1959 Ford Trucks
MANUFACTURER	Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Maryland
TYPE SET	Battery Operated 4 Tube Custom Built AM Truck Receiver With Transistorized Output
POWER SUPPLY	12 Volt Storage Battery
RATING	1.2 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	535 - 1605KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Set Tone Control to "HIGH".

Suggested Alignment Tools:
A1, A2, A3, A4 ..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544. 2545
A5, A6 ..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A8, A9, A10 ..... GENERAL CEMENT #9050L, 9150
WALSCO #2521

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400~ Mod.)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1605KC	"	"	A5, A6, A7	"
3.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and readjust A7 for maximum output. Step 4 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Repeat step 2.						
4.	Fig. 1	Thru dummy to antenna receptacle.	1605KC	Tuner carriage .285" from high freq. end stop.	Across voice coil	A8, A9, A10	Adjust for maximum output. Repeat steps 2 and 4 until no further improvement is obtained.

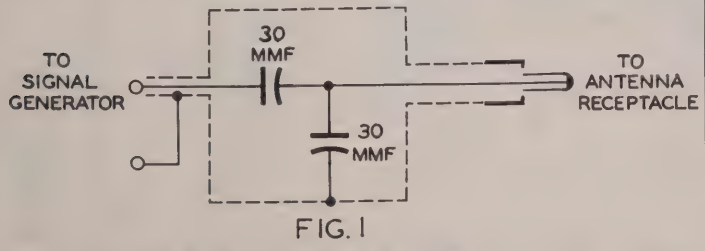
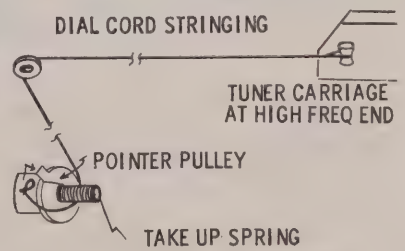


FIG. 1



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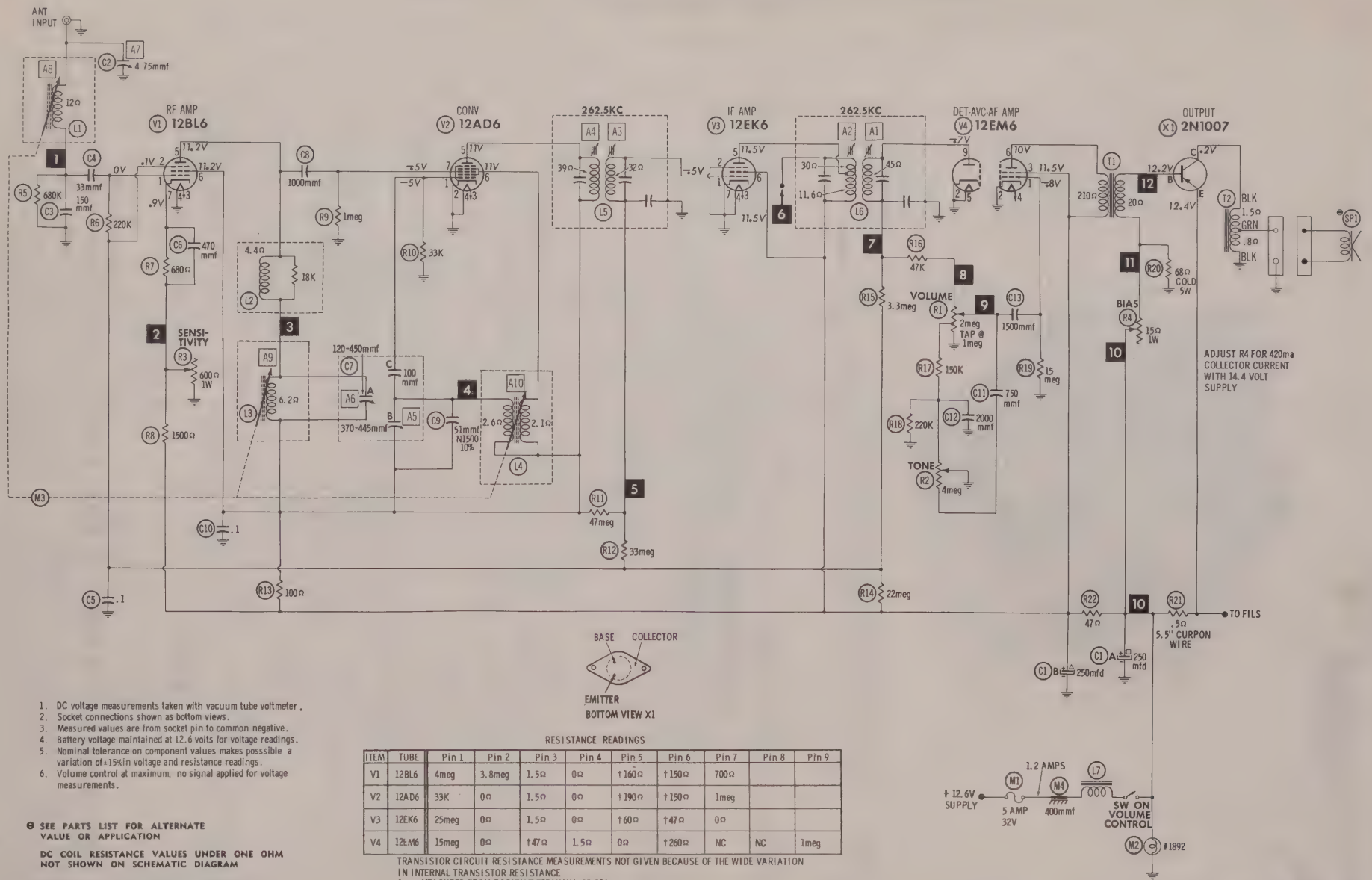

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	4meg	3.8meg	1.5Ω	0Ω	†160Ω	†150Ω	700Ω		
V2	12AD6	33K	0Ω	1.5Ω	0Ω	†190Ω	†150Ω	1meg		
V3	12EK6	25meg	0Ω	1.5Ω	0Ω	†60Ω	†47Ω	0Ω		
V4	12EM6	15meg	0Ω	†47Ω	1.5Ω	0Ω	†260Ω	NC	NC	1meg

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

† MEASURED FROM POSITIVE TERMINAL OF C1A

NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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FORD MODEL 94BT (B9C-18805-A1)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12EK6	
V4	Det. - AVC - AF Amp.	12EM6	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES	
			CBS PART No.	RCA PART No.	RAYTHEON *PART No.	SYLVANIA PART No.		
X1	2N1007	Output					PNP	Note 1

Note 1. When replacing, coat both sides of insulator with silicon grease.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■250	16	220353-4	AFH2-02-05		PWP200.3		PCL-2170	
B	▲250	16							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	4-75			219083-1						
C3	150			220350-601	1468-00015	DD-151	5W5T15	MC-236	1FM-315	
C4	33			220332-35	BPD-000033	DD-330	L10Q33	CNO-433	5GA-Q33	
C5	.1	100		220352-11	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C6	470			220332-38	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C7A	120-450									
B	370-445			219092-1						
C	100									
C8	1000			220332-48	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C9	51		N1500 10%	220332-22						
C10	.1	100		220352-11	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C11	750			2090058U-202M	DI-750	DD-751	L10T75	JL-375	5GA-T75	
C12	2000			2090058U-202M	BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C13	1500			220332-60	BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	1/2	2090253-2				TA26T16	Volume, Tap @ 1meg
B	Switch							Power On-Off
R2	4meg	1/4	2090257-2					Tone
R3	600Ω	1(WW)	2090181-2					Sensitivity
R4	15Ω	1(WW)	2090181-1				PFL-15	Bias

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		BENDIX PART No.	NOTES
	OHMS	WATT		
R5	680K		220604B-684	
R6	220K		220604B-224	
R7	680Ω		220604B-681	
R8	1500Ω		220604B-152	
R9	1meg		220604B-105	
R10	33K		220604B-333	
R11	47meg		220604B-476	
R12	33meg		220604B-336	
R13	100Ω		220604B-101	

ITEM No.	RATING		BENDIX PART No.	NOTES
	OHMS	WATT		
R14	22meg		220604B-226	
R15	3.3meg		220604B-335	
R16	47K		220604B-473	
R17	150K		220604B-154	
R18	220K		220604B-224	
R19	15meg		220604B-156	
R20	68Ω Cold	5	2090574-1	
R21	.5Ω		2090438-10	5.5" Cupron Wire
R22	47Ω		220604B-470	

PRINTED BOARD

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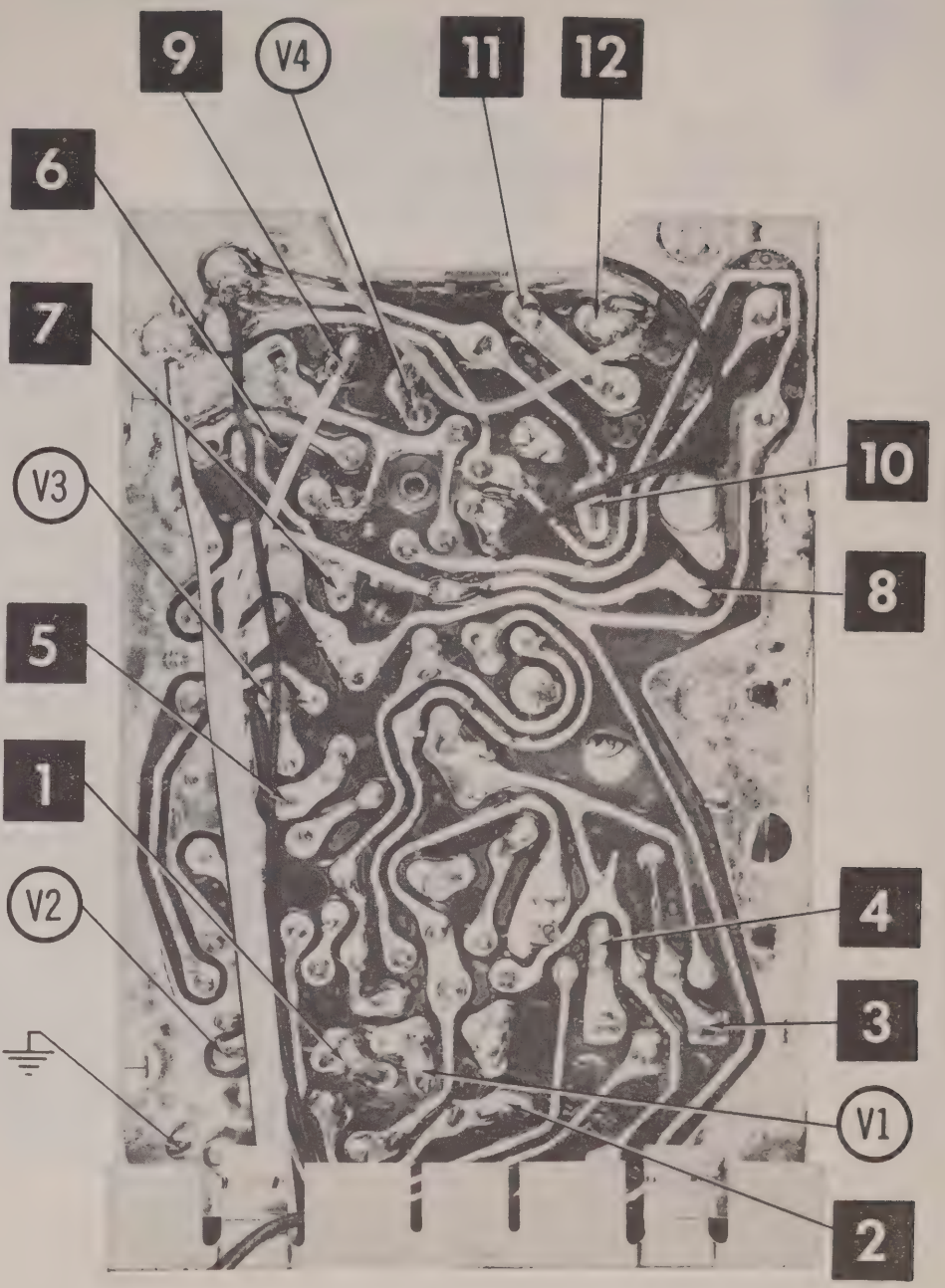
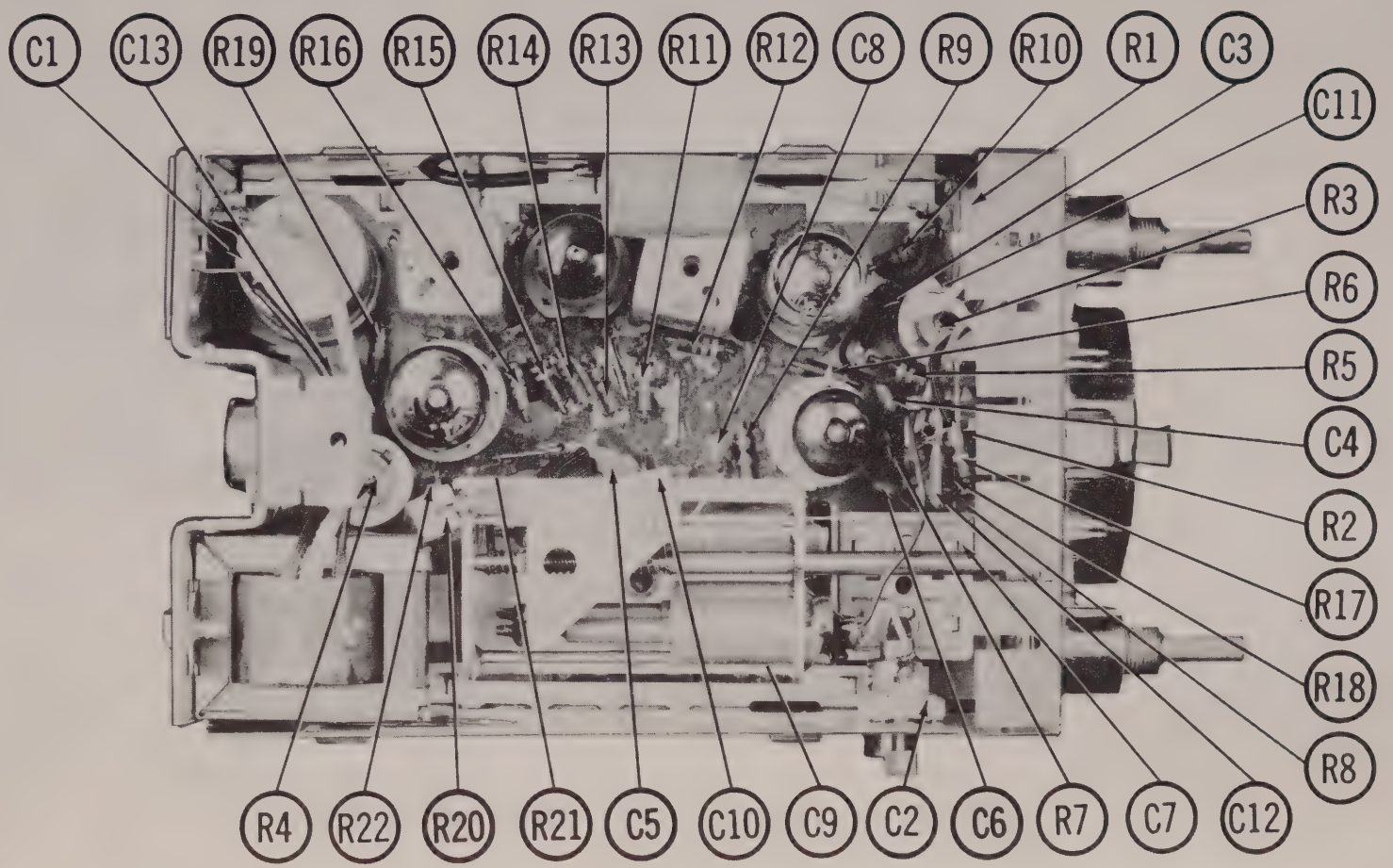
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED





CHASSIS-TOP VIEW

(B9C-18805-AI)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		BENDIX PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	†						† Part of M3
L2	Image Trap	2090088-1						Wound on 18K
L3	RF Coil	†						
L4	Osc. Coil	†						
L5	Input IF	2090907-1						
L6	Output IF	2090908-2						
L7	"A" Lead Choke	216188-17						130uh

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	BENDIX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3:	1	2090259-2						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	BENDIX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	22Ω Tap ③ 3-4Ω	2090260-1							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
SP1	5" x 7"	PM	3-4Ω	2090182-1 ①	57A21	① Alternate Part #655061-2

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	1AG	5A 32V	AGA-5	2090932-2 2090717-1 (cap)	301005. (1AG 5A 32V)	155004	SFE4	HAF

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Lamp	1892	#1892
M3	Tuner Assembly	2090173-1	
M4	Spark Plate	220267-10	400mmf
	Printed Board	2090186-1	Assembly (Less Tuner)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	2090149-2	Tuning
Bezel	2090149-1	On-Off-Volume
Bezel	2090184-1	Dial
Knob Assembly	2090153-2	Tuning, Volume-On-Off
Knob	2090148-2	Tone
Cover	2090158-1	Top or Bottom
Dial Pointer	2090169-1	
Calibrated Dial	2090349-2	Includes Escutcheon, Assembly
Calibrated Dial	2090170-2	
Sub Dial	2090155-2	Back Plate

WIRING DATA

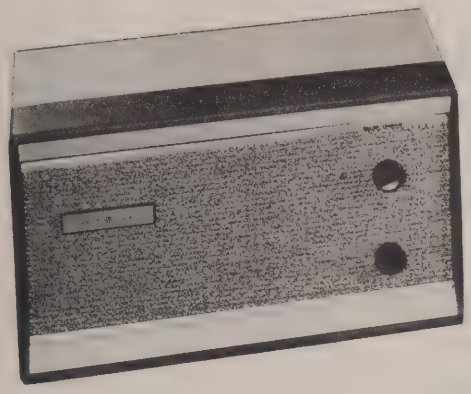
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

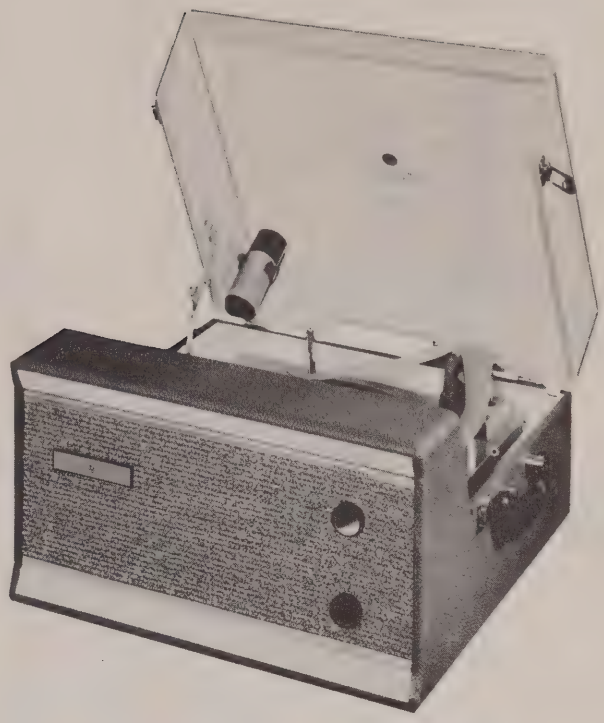
CHASSIS-TOP VIEW

PHOTOFACT* Folder with CIRCUITRACE*

GENERAL ELECTRIC MODELS
AS-2A, AS-3A, RP1110A, RP1120A, B

GENERAL ELECTRIC MODELS
AS-2A, AS-3A, RP1110A, RP1120A, B





GENERAL ELECTRIC MODELS
AS-2A, AS-3A, RP1110A, RP1120A, B

TRADE NAME	General Electric Models AS-2A, AS-3A, RP1110A, RP1120A, RP1120B
MANUFACTURER	General Electric Co., Products Service, Radio Receiver Dept., 869 Broad St,. Utica, N. Y.
TYPE SET	AC Operated Two Tube Phono Amplifier With 4 Speed Automatic Record Changer Model RP1110A is Monaural; RP1120A, B are Stereo With AS-2A or AS-3A Amplifiers
POWER SUPPLY	105-120 Volts AC, 60 Cycles RATING 49 Watts, .45A@117 Volts AC (RP Series With Motor) 26 Watts, .32A@117 Volts AC (AS Series)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR V-M 959 — PHOTOFACT SET 396 FOLDER 13

DISASSEMBLY

Models RP Series

1. Open cabinet lid and remove screws holding vent panel board and interlock. Remove panel board.
2. Remove control knobs.
3. Loosen interlock mounting screws and slide interlock free.
4. Remove 3 screws (Model RP1110A) or 3 nuts from screws (Models RP1120A, B) on cabinet brace above speakers. On Models RP1120A, B remove 3 nuts from screws on cabinet brace below speakers.
5. Lift out grille with amplifier.
6. Remove screws holding amplifier to grille.

Models AS Series

1. Remove screws holding cabinet back.
2. Remove cabinet back by pulling out and down.
3. Remove interlock mounting screws.
4. Remove screw holding stereo cord.
5. Remove power transformer mounting nuts.
6. Remove 6 nuts holding front panel. Slide panel forward.

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RP1110A, RP1120A, B PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Channel 1 AF Amp.	6AT6	

ITEM No.	USE	TYPE	NOTES
V2	Channel 1 Output	25C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	G. E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	100	150	RS-1600	PRS150V804020	BBRD0183.7	TCD498	TDLD-14	TVA-2462 *	
B	50	150							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	400	10%				PM-4S47	GEM-16147	5BF-S47	
C3	15		NPO	RS-1305	NPO-DI 15	DTZ-15	C10Q15C	CNO-415	5TCC-Q15	①
C4	5000			RS-1023	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	①
C5	.22	600			P688N-22		CUB6P22	GEM-6022	6TM-P22	

① Not used in Model RP-1110A

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	5meg	½	RS-1603	B-88	A47-5meg-Z	Q13-141	U65	Loudness
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	1meg	½	RS-1602	B-70	A47-1meg-Z	Q13-137	U53	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		G. E. PART No.	NOTES
	OHMS	WATT		
R3	220K			
R4	33K			Note 1

ITEM No.	RATING		G. E. PART No.	NOTES
	OHMS	WATT		
R5	33Ω	2		
R6	68K			

Note 1. Not used in Model RP1110A

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	G. E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3100Ω	1-2Ω	RS-1620①	24S52	A-2903	AU-602	A-3878	24S52	S-7X	

① Used in Models RP1120A, B. Part #RS-1604 used in Model RP-1110A.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	G. E. PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3-4Ω	RB-1046	52A21	Models RP1120A, B
SP2	5 1/4"	PM	3-4Ω	RB-1046	52A21	
	5 1/4"	PM		ROP-042		Model RP1110A

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G. E. PART No.	REPLACEMENT DATA
K1	Audio Couplate	2200mmf, 5000mmf, 10000mmf, 10000mmf, 150Ω, 270Ω, 3300Ω, 6800Ω, 10K, 22K, 160K, 470K	RS-1619①	

① Model RP1110A uses Part #RS-1601 in this application.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	G. E. PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.046A	RS-1605①	HA-154① 1235AH②	SD-94①	K200①		① Silicon Type ② Selenium Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			G. E. PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	2/10A 250V S/B	REF-026		315, 200 (2/10A 125V S/B)		MDV 2/10	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	G. E. PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M3	RS-1651 (Stereo)	13-T				Model RP1120A, RP1120B
	RS-1599 (Monaural)	81-T				Model RP1110A

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	RS-1610	Loudness, Tone, Models RP1120A, RP1120B
Knob	RS-1595	Volume, Tone, Model RP1110A

AS-2A, AS-3A, PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V3	Channel 2 AF Amp.	6AT6	

ITEM No.	USE	TYPE	NOTES
V4	Channel 2 Output	25C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	G. E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C6A	100	150	RS-1600	PRS150V804020	BBRD0183.7	TCD498	TDLD-14	TVA-2462 *	
B	50	150							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	15		NPO	RS-1305	NPO-DI 15	DTZ-15	C10Q15C	CNO-415	5TCC-Q15	
C8	5000			RS-1023	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R7A	5meg	½	RS-1673					Loudness Push Pull Switch Tone
B	Switch							
R8A	1meg	½	RS-1602	B-70	A47-1meg-Z	Q13-137	U53	
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		G. E. PART No.	NOTES
	OHMS	WATT		
R9	220K			
R10	33K			

ITEM No.	RATING		G. E. PART No.	NOTES
	OHMS	WATT		
R11	33Ω	2		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G. E. PART No.	REPLACEMENT DATA
K2	Audio Couplate	2200mmf, 5000mmf, 10000mmf, 10000mmf, 150Ω, 270Ω, 3300Ω, 6800Ω, 10K, 22K, 160K, 470K	RS-1619	

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA						
	PRI.	SEC. 1	G. E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	117V ⓐ .32A	120V ⓐ .050A Tap ⓐ 32V ⓐ .4A	RS-1674						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	G. E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	3100Ω	1-2Ω	RS-1620	24S52	A-2903	AU-602	A-3878	24S52	S-7X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	G. E. PART No.	QUAM PART No.	
SP3	5 1/4"	PM	3-4Ω	RB-1046	52A21	
SP4	5 1/4"	PM	3-4Ω	RB-1046	52A21	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	G. E. PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M4	.046A	RS-1605①	HA154① 1235AH②	SD-94①	K200①		① Silicon Type ② Selenium Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			G. E. PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M5	3AG	2/10A 250V S/B	REF-026		315.200 (2/10A 125V S/B)		MDV 2/10	

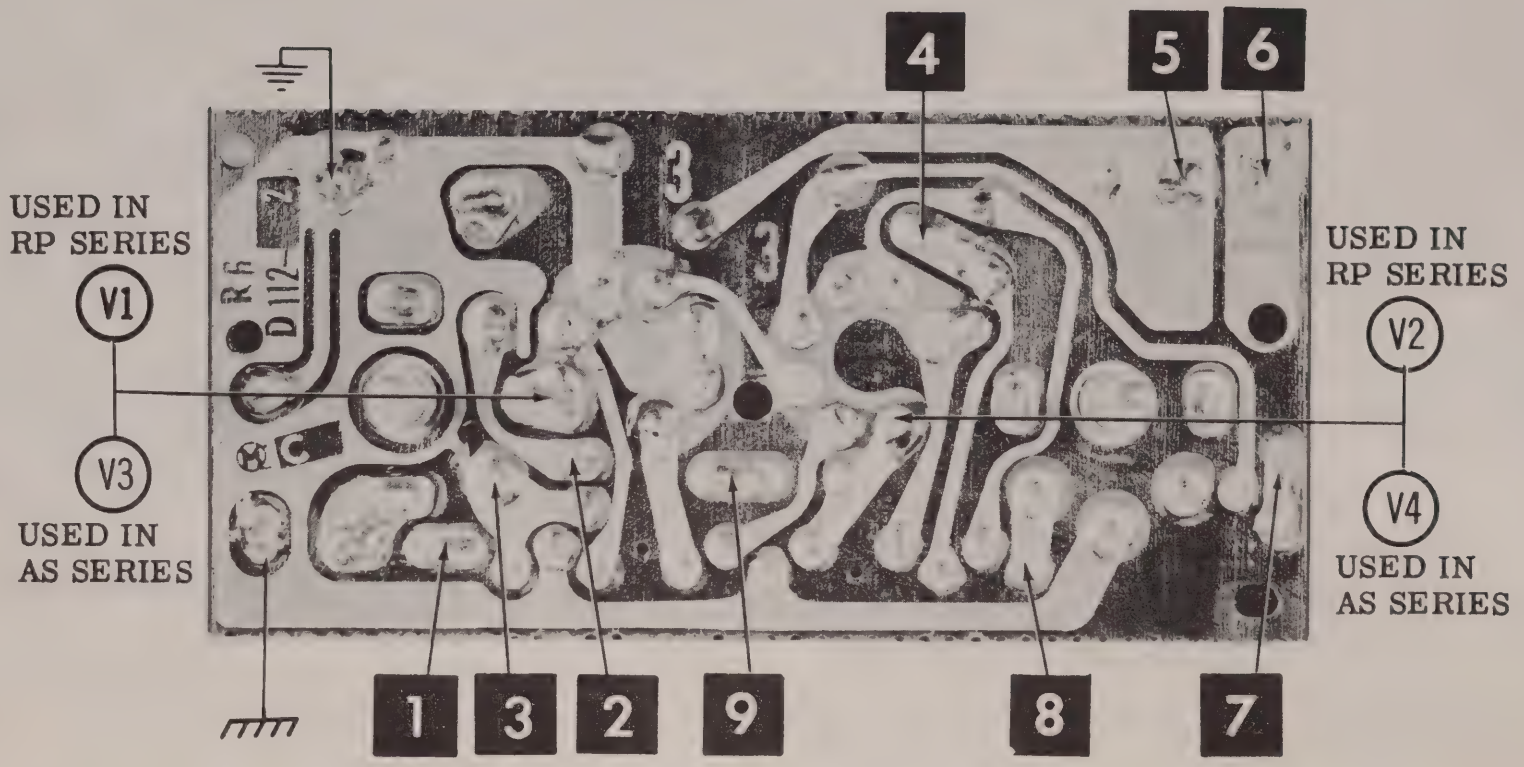
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	RS-1610	Volume & Tone

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Power Cord (Interlock Type)	Use BELDEN No. 8874
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



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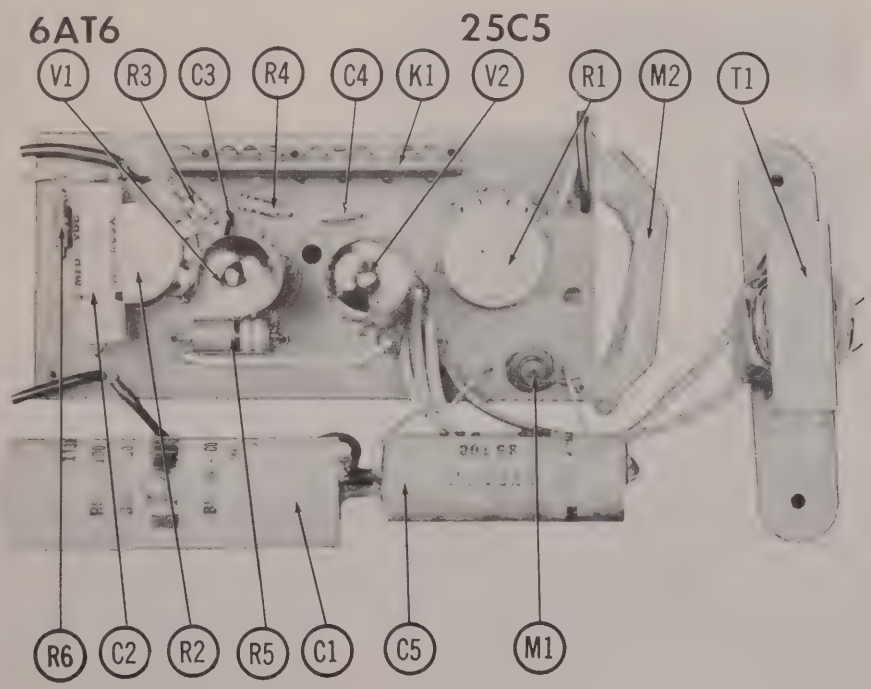
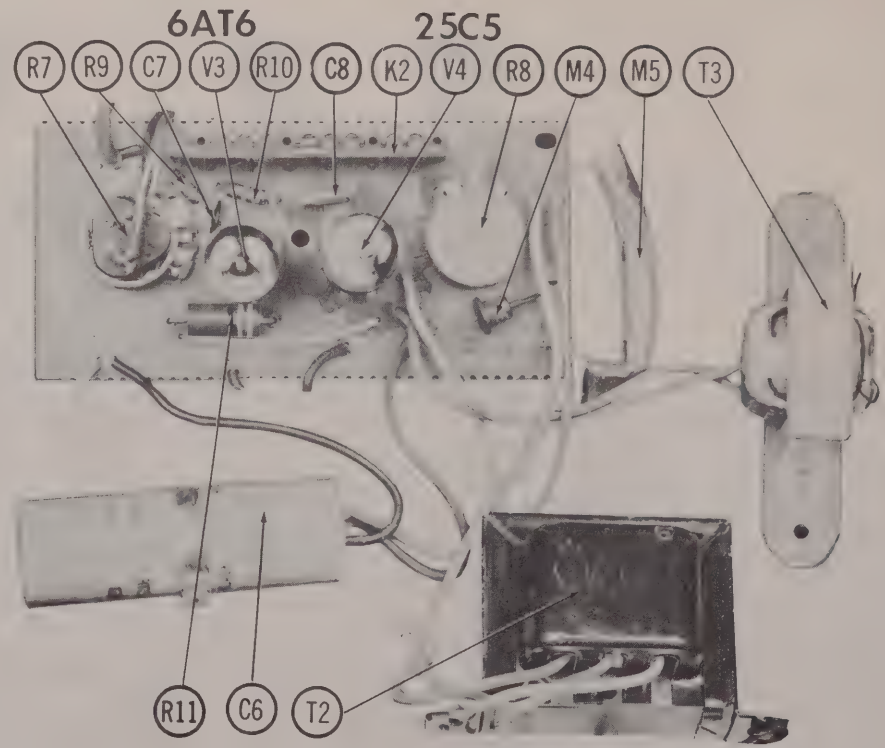
PRINTED BOARD

AS-2A, AS-3A, RPIIOA, RPII20A, B

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



"RP" SERIES CHASSIS



"AS" SERIES CHASSIS

MODELS
RP1110A, RP1120A, B
MODELS
AS-2A, AS-3A
AF AMP
6AT6
OUTPUT
25C5
TONE
LOUDNESS
CHANNEL 1
CHANNEL 2
PHONO INPUT
SPEAKER CIRCUIT USED IN MODEL RP1110A
PHONO CARTRIDGE USED IN MODEL RP1110A
SW ON LOUDNESS CONTROL
PHONO MOTOR
DENOTES CHASSIS
DENOTES B-
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.
† MEASURED FROM OUTPUT OF M1
†† MEASURED FROM OUTPUT OF M4
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

Pin No.	V1	V2
1	6AT6	25C5
2	10K	150Ω
3	270Ω	470K
4	0Ω	2.6Ω
5	2.6Ω	11.5Ω
6	0Ω	470K
7	† 165K	†260Ω

Pin No.	V3	V4
1	6AT6	25C5
2	10K	150Ω
3	270Ω	470K
4	0Ω	2.3Ω
5	2.3Ω	4.8Ω
6	0Ω	470K
7	0Ω	†† 6800Ω
	†† 165K	†† 260Ω

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GENERAL ELECTRIC MODELS
AS-2A, AS-3A, RP1110A, RP1120A, B

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

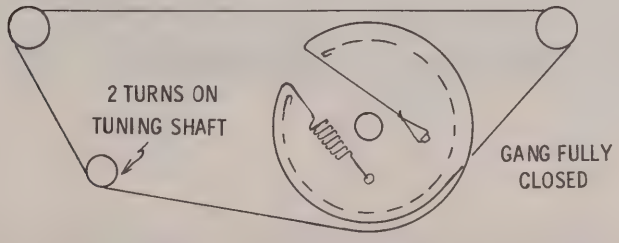
GONSET
MODEL 3158

GONSET
MODEL 3158

GONSET
MODEL 3158

TRADE NAME	Gonset Model 3158
MANUFACTURER	Gonset, Div. of L. A. Young Spring and Wire Corp., 801 S. Main St., Burbank, California
TYPE SET	AC Operated, FM Communications Monitor Receiver (9 Tube)
POWER SUPPLY	110-120 Volts AC, 50-60 Cycles RATING 57 Watts, .55 Amp. @117 Volts AC
TUNING RANGE — FREQ. MOD.	152-174MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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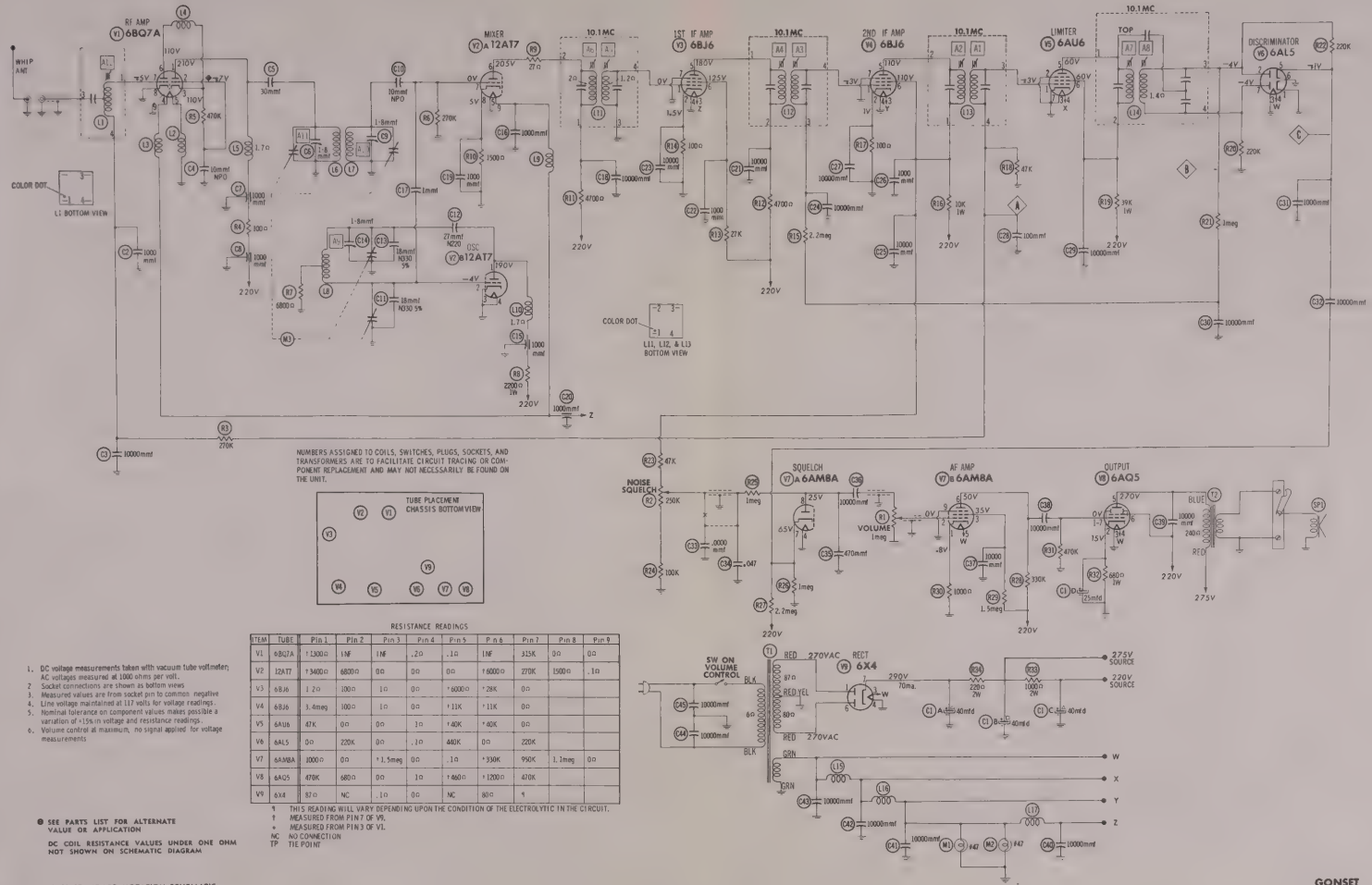
CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

TUBE PLACEMENT CHASSIS BOTTOM VIEW

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BQ7A	†1300Ω	1NF	1NF	.2Ω	.1Ω	1NF	315K	0Ω	0Ω
V2	12AT7	†3400Ω	6800Ω	0Ω	0Ω	0Ω	†6000Ω	270K	1500Ω	.1Ω
V3	6BJ6	1.2Ω	100Ω	1Ω	0Ω	*6000Ω	*28K	0Ω		
V4	6BJ6	3.4meg	100Ω	1Ω	0Ω	*11K	*11K	0Ω		
V5	6AU6	47K	0Ω	0Ω	1Ω	†40K	†40K	0Ω		
V6	6AL5	0Ω	220K	0Ω	.1Ω	440K	0Ω	220K		
V7	6AM8A	1000Ω	0Ω	*1.5meg	0Ω	.1Ω	*330K	950K	1.1meg	0Ω
V8	6AQ5	470K	680Ω	0Ω	1Ω	†660Ω	†1200Ω	470K		
V9	6X4	87Ω	NC	.1Ω	0Ω	NC	80Ω	¶		

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
* MEASURED FROM PIN 3 OF V1.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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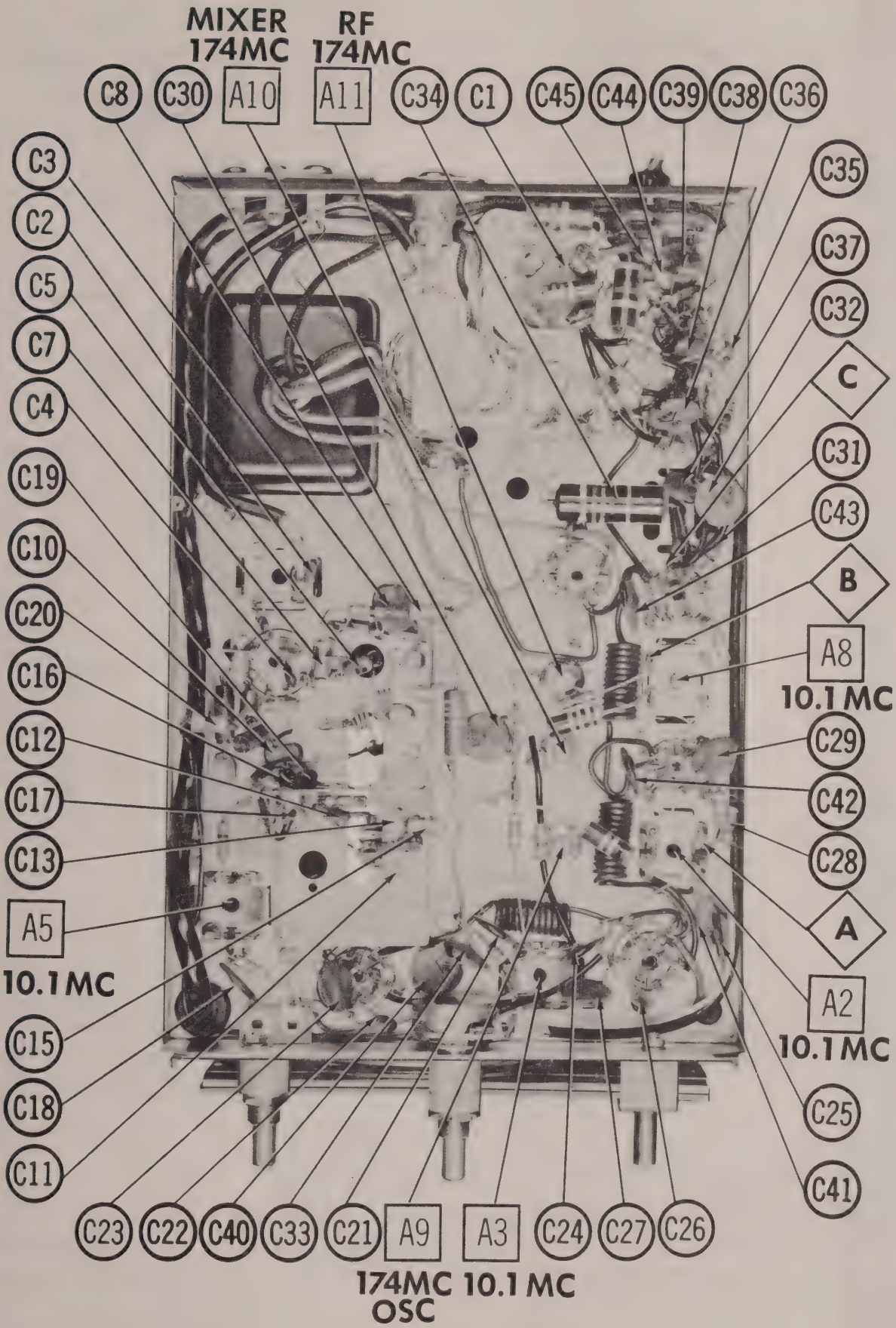
GONSET
MODEL 3158



CHASSIS BOTTOM VIEW - CAPACITOR & ALIGN IDENT

GONSET MODEL 3158

FOLDER 10

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Suggested alignment tools:
A1 thru A6..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A7, A8, A12..... GENERAL CEMENT #8721, 8722
WALSCO #2519
A9, A10, A11..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

IF ALIGNMENT USING AM SIGNAL GENERATOR & VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	10.1MC (Unmod.)	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	"	"	"	"	DC probe thru 1meg to point Ⓑ. Common to chassis.	A7	"
3.	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR & OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	10.1MC (450KC Swp)	Point of non-interference	Vert. amp to point Ⓐ. Low side to chassis.	A1, A2, A3, A4, A5, A6	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
2.	"	"	"	"	Vert. amp thru 27K to point Ⓑ. Low side to chassis.	A7	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
3.	"	"	"	"	Vert. amp to point Ⓒ. Low side to chassis.	A8	Adjust so that 10.1MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

RF ALIGNMENT

Chassis should be in cabinet for adjustment of mixer and oscillator trimmers.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	50Ω Carbon Resistor	High side thru 50Ω to antenna receptacle Low side to chassis.	174MC (Unmod.)	174MC	DC probe to point Ⓐ. Common to chassis.	A9	Adjust for maximum deflection.
5.		Not Used	"	"	Not Used	A10, A11	Adjust for maximum background noise with no signal at the input. (Antenna disconnected) Repeat Steps 4 & 5 until no further improvement is obtained.
6.	50Ω Carbon Resistor	High side to antenna receptacle. Low side to chassis.	152MC	152MC	DC probe to point A. Common to chassis.	A12	Adjust for maximum deflection.

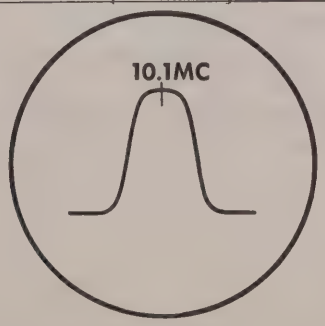


FIG. 1

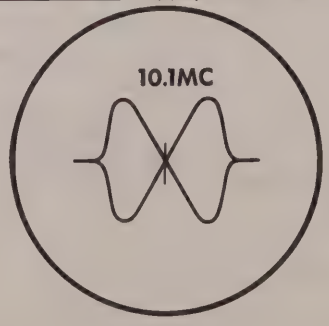


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BQ7A	
V2	Mixer-Oscillator	12AT7	
V3	1st IF Amplifier	6BJ6	
V4	2nd IF Amplifier	6BJ6	
V5	Limiter	6AU6	

ITEM No.	USE	TYPE	NOTES
V6	Discriminator	6AL5	
V7	Squelch-AF Amp.	6AM8A	
V8	Output	6AQ5	
V9	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	GONSET PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▰40	450				FP384.7	TMT-154	TVLS. 4708.4*	
B	■40	350				TC78	TD-40-350		
C	▲40	350							
D	25	50							

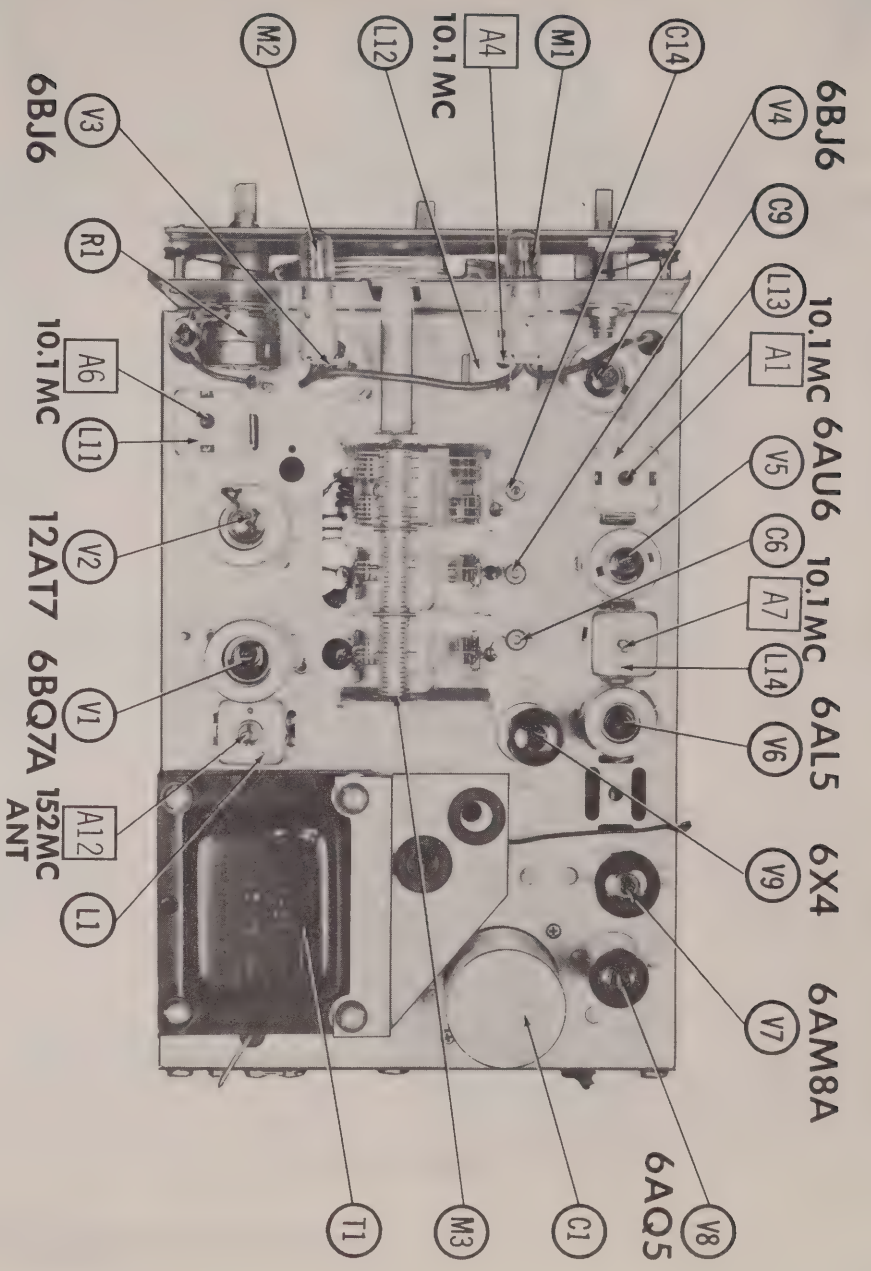
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	GONSET PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C3	10000				BPD-01	DD-103	BYA10S1	B-110	5GA-S1	
C4	10		NPO		NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1	
C5	30				SI 30	TCZ-30	L10Q3		5GA-Q3	
C6	1-8					829-7				
C7	1000				EF-001	MFT-1000			503C-D1	
C8	1000				EF-001	MFT-1000			503C-D1	
C9	1-8					829-7				
C10	10		NPO		NPO-S10	TCZ-10	C10Q1C	ZT-541	5TCC-Q1	
C11	18		N330 5%							
C12	27		N220							
C13	18		N330 5%							
C14	1-8					829-7				
C15	1000				EF-001	MFT-1000			503C-D1	
C16	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C17	1				NPO-SI 1	TCZ-1		CNO-510	5TCCB-V1	
C18	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C19	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C20	1000				EF-001	MFT-1000			503C-D1	
C21	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C22	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C23	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C24	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C25	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C26	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C27	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C28	100				BPD-0001	DD-101	L10T1	CNO-310	5GA-T1	
C29	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C30	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C31	1000				BPD-001	DD-102	BYA10D1M	B-210	5GA-D1	
C32	10000				BPD-01	DD-103	BYA10S1	B-110	5GA-S1	
C33	10000				BPD-01	DD-103	BYA10S1	B-110	5GA-S1	
C34	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C35	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C36	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C37	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C38	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C39	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C40	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C41	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C42	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C43	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C44	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C45	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GONSET PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	½	BL-002					Volume & Switch
R2	250K	½	BL-001					Noise Squelch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		GONSET PART No.	NOTES
	OHMS	WATT		
R3	270K			
R4	100Ω			
R5	470K			
R6	270K			
R7	6800Ω			
R8	2200Ω	1		
R9	27Ω			
R10	1500Ω			
R11	4700Ω			
R12	4700Ω			
R13	27K			
R14	100Ω			
R15	2.2meg			
R16	10K	1		
R17	100Ω			
R18	47K			

ITEM No.	RATING		GONSET PART No.	NOTES
	OHMS	WATT		
R19	39K	1		
R20	220K			
R21	1meg			
R22	220K			
R23	47K			
R24	100K			
R25	1meg			
R26	1meg			
R27	2.2meg			
R28	330K			
R29	1.5meg			
R30	1000Ω			
R31	470K			
R32	680Ω	1		
R33	1000Ω	2		
R34	220Ω	2		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		GONSET PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil							
L2	Fil. Choke							1.9uh
L3	Fil. Choke							1.9uh
L4	RF Choke		19-1000	19-1000	BC-561	4602		1uh
L5	RF Choke							5.4uh
L6	RF Coil							
L7	Mixer Coil							
L8	Osc. Coil							
L9	Fil. Choke							1.9uh
L10	RF Choke		19-1008	19-1008	SW-631	4609		5.4uh
L11	1st IF Trans.		16-3487	16-3487	FM-254	1463		
L12	2nd IF Trans.		16-3487	16-3487	FM-254	1463		
L13	3rd IF Trans.		16-3487	16-3487	FM-254	1463		
L14	Discriminator		17-3494 *					* Omit sec tap
L15	Fil. Choke							1.2uh
L16	Fil. Choke							1.2uh
L17	Fil. Choke							1.2uh

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	GONSET PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .55A	540 VCT @.070A	6.3V@ 3.2A	JA-001		P-3048				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	GONSET PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5200Ω	3-4Ω	JB-001	24S48	A-3026			24S48	S-6X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	GONSET PART No.	QUAM PART No.	
SP1	4"	PM	2-4Ω		4A07	

MISCELLANEOUS

ITEM No.	PART NAME	GONSET PART No.	NOTES
M1	Lamp		#47
M2	Lamp		#47
M3	Tuning Cap.		FM, 4 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

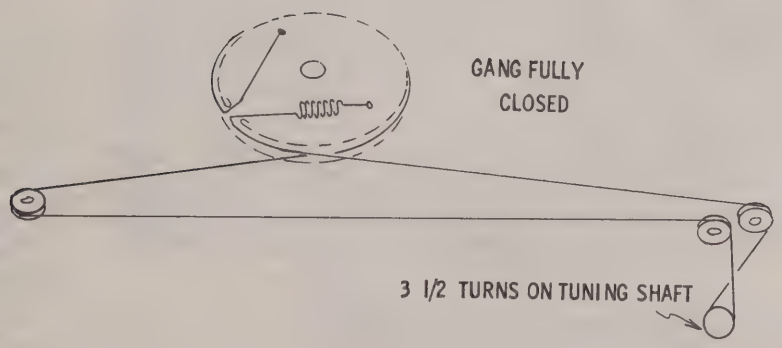
KNIGHT MODEL KN-140

KNIGHT MODEL KN-140

KNIGHT MODEL KN-140

TRADE NAME	Knight Model KN-140
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois
TYPE SET	AC Operated 5 Tube FM Tuner
POWER SUPPLY	110-120 Volts AC, 50-60 Cycles
TUNING RANGE — FREQ. MOD.	88-108MC RATING 23 Watts, .22 Amp. @117 Volts AC

DRIVE CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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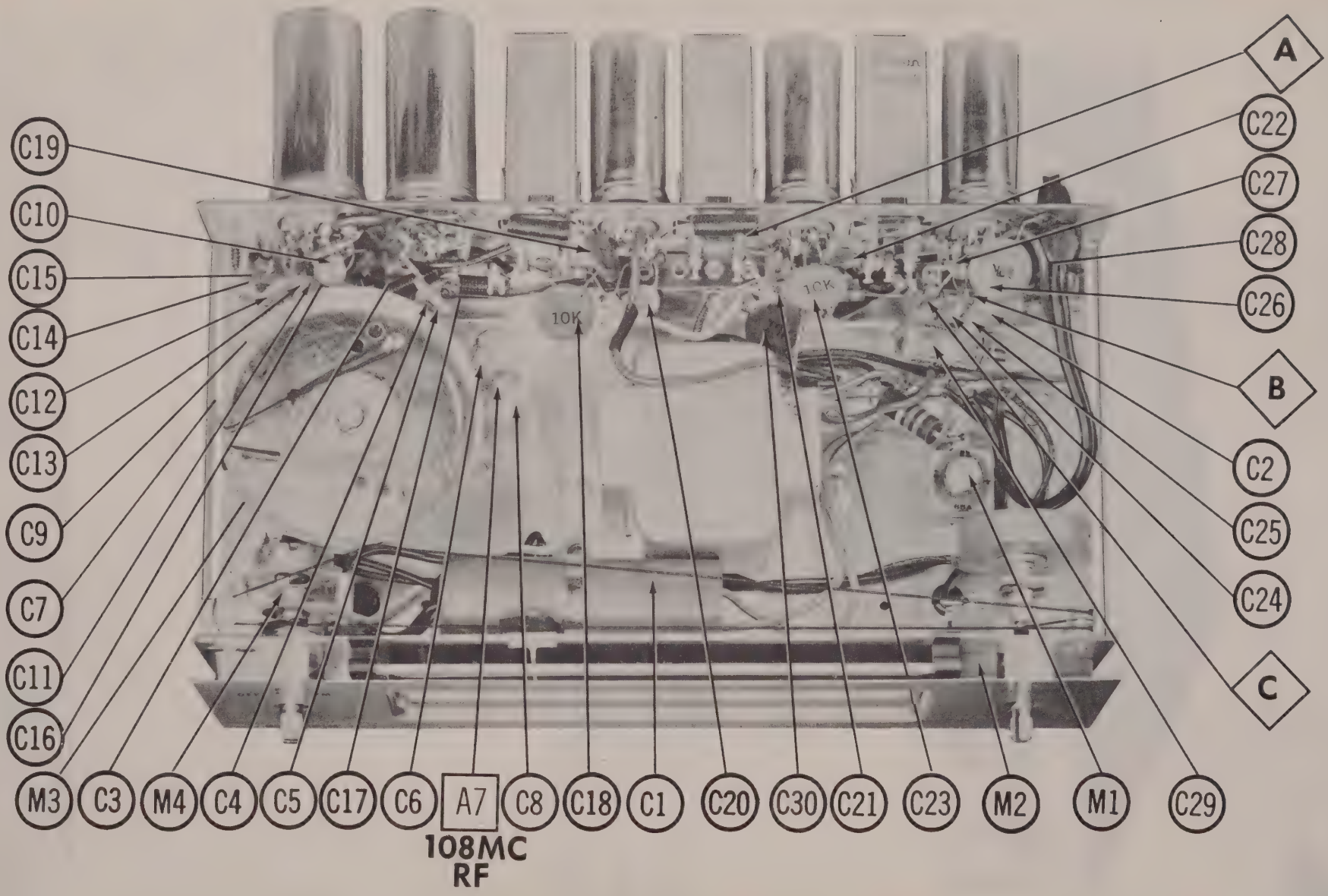


CHASSIS BOTTOM VIEW - ALIGN, CAPACITOR, & MISC IDENT

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amp. -Mixer	12AT7	
V2	Osc. -AFC	12AT7	
V3	1st IF Amplifier	6CB6	

ITEM No.	USE	TYPE	NOTES
V4	2nd IF Amplifier	6AU6	
V5	Ratio Detector	6AL5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	75	150		PRS150V100100	BBRD101015	TCS-505	TDLD-13	TVAS-2458.5*	
B	75	150							
C2	8	25		PRS150V8	BBR8-150	TT25X8	TD-8-150	TVA-1405	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C4	22		NPO 10%		NPO-DI 22	DTZ-22	C10Q22C	CNO-422	5TCC-Q22S 10%*	
C5	1500				BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	
C6	5		NPO 10%		NPO-DI 5				5TCCB-V5S 10%*	
C7	2.2		10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CNO-522	5TCCB-V22S 10%	
C8	5-8									
C9	10		NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10%*	
C10	100		N220 10%							
C11	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C12	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C13	10		NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10%*	
C14	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C15	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C16	10		NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10%*	
C17	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C18	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C19	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C20	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C21	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C22	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C23	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C24	330		10%		DI 330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C25	330		10%		DI 330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C26	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C27	330		10%		DI 330	MD-331	L10T33	JL-330	5GA-T33S 10%*	
C28	560		10%		DI 560	MD-561		JL-560	5GA-T56S 10%*	
C29	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C30	10000				B10-01	DD-103	BYA10S1	B-110	5HK-S1	①

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Not used in some versions.

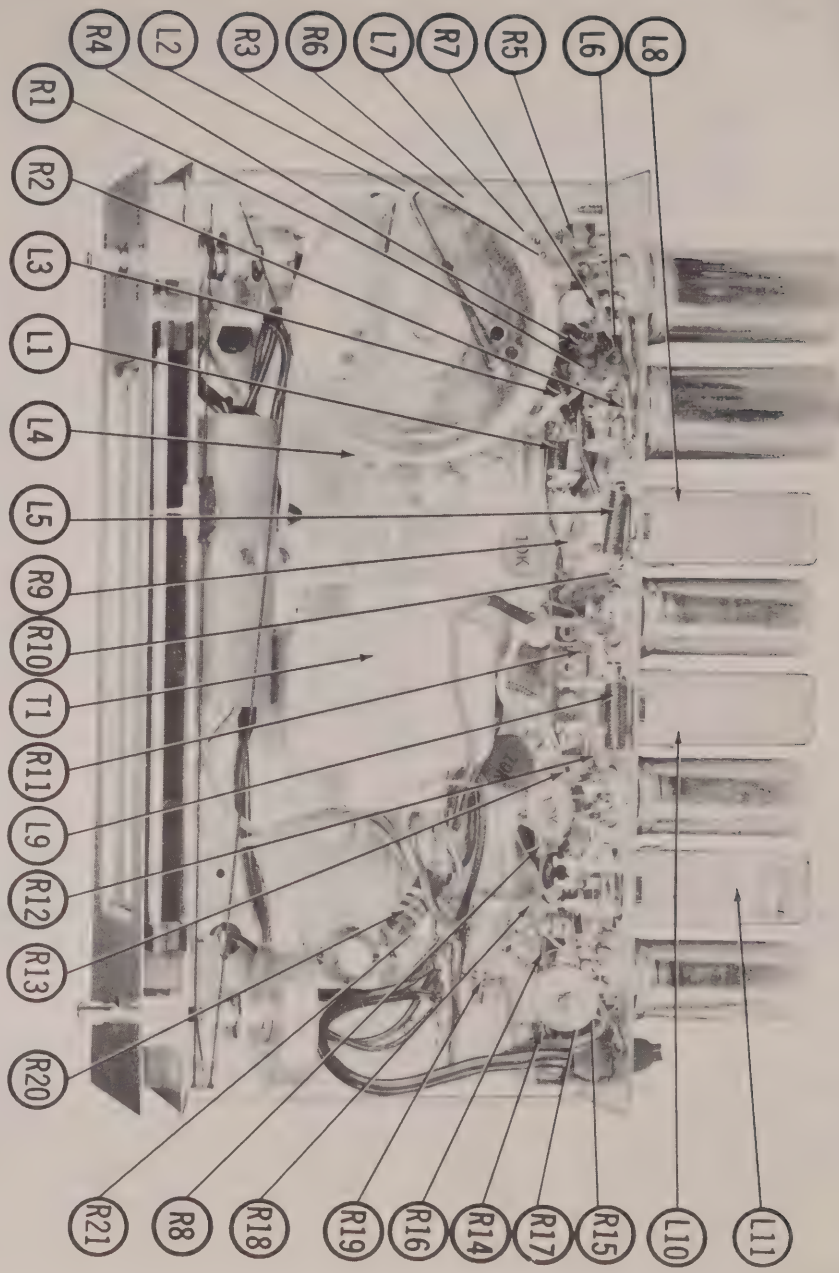
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		KNIGHT PART No.	NOTES
	OHMS	WATT		
R1	68Ω			
R2	1.5meg			
R3	10K			
R4	1000Ω			
R5	100Ω			
R6	470K			

ITEM No.	RATING		KNIGHT PART No.	NOTES
	OHMS	WATT		
R7	560Ω			
R8	3.3meg			
R9	1000Ω			
R10	150Ω			
R11	1000Ω			
R12	330K			

CHASSIS—BOTTOM VIEW



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Suggested Alignment Tools: A1 thru A6..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A7..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Set switch to "FM" (No AFC)

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12AT7 (V1). Low side to chassis.	10.7MC (Unmod.)	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A5	"
3.	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 2 & 3.

IF ALIGNMENT USING FM SIGNAL GENERATOR & OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12AT7 (V1). Low side to chassis.	10.7MC (450KC Swp)	Point of non-interference	Vert. amp to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum amplitude & symmetry similar to Fig. 1.
2.	"	"	"	"	Vert. amp to point Ⓑ. Low side to chassis.	A5	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
3.	"	"	"	"	Vert. amp thru 100K to point Ⓒ. Low side to chassis.	A6	Reconnect stabilizing C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A5 for maximum amplitude and straightness of crossover lines. Repeat Steps 2 & 3.

RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	270Ω Carbon Resistor	High side to antenna terminal. Low side to chassis.	88MC (Unmod.)	88MC	DC probe to point Ⓐ. Common to chassis.	L4	Adjust for maximum deflection by compressing or expanding coil turns.
5.	"	"	108MC	108MC	"	A7	Adjust for maximum deflection.
6.	"	"	88MC	88MC	"	L2	Adjust for maximum drflection by compressing or expanding coil turns. Repeat Steps 4, 5, & 6.

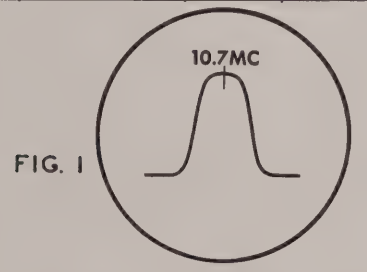


FIG. 1

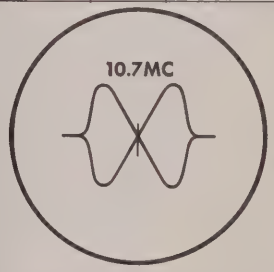
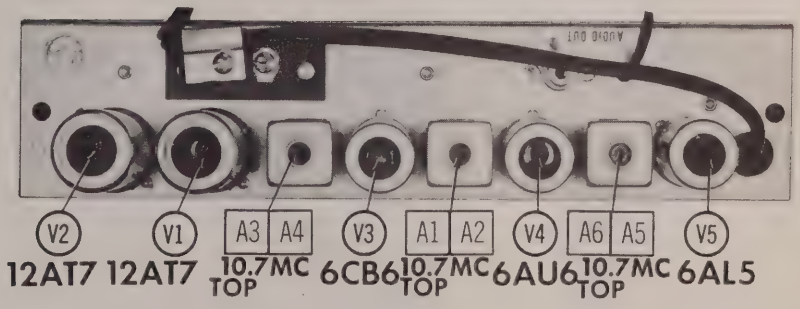


FIG. 2



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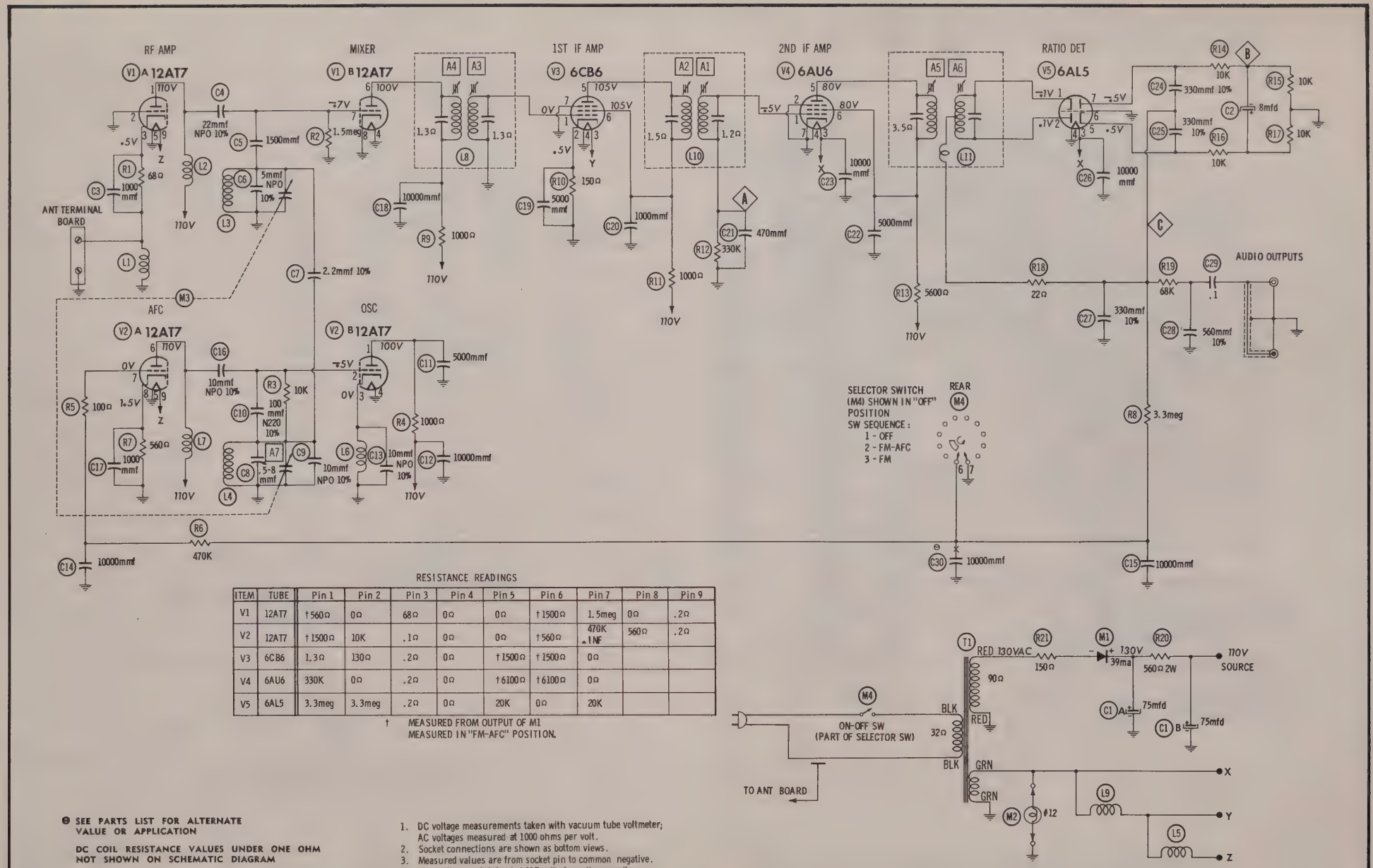
FOLDER 11



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AT7	†560Ω	0Ω	68Ω	0Ω	0Ω	†1500Ω	1.5meg	0Ω	.2Ω
V2	12AT7	†1500Ω	10K	.1Ω	0Ω	0Ω	†560Ω	470K ∠1NF	560Ω	.2Ω
V3	6CB6	1.3Ω	130Ω	.2Ω	0Ω	†1500Ω	†1500Ω	0Ω		
V4	6AU6	330K	0Ω	.2Ω	0Ω	†6100Ω	†6100Ω	0Ω		
V5	6AL5	3.3meg	3.3meg	.2Ω	0Ω	20K	0Ω	20K		

† MEASURED FROM OUTPUT OF M1
MEASURED IN "FM-AFC" POSITION.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. No signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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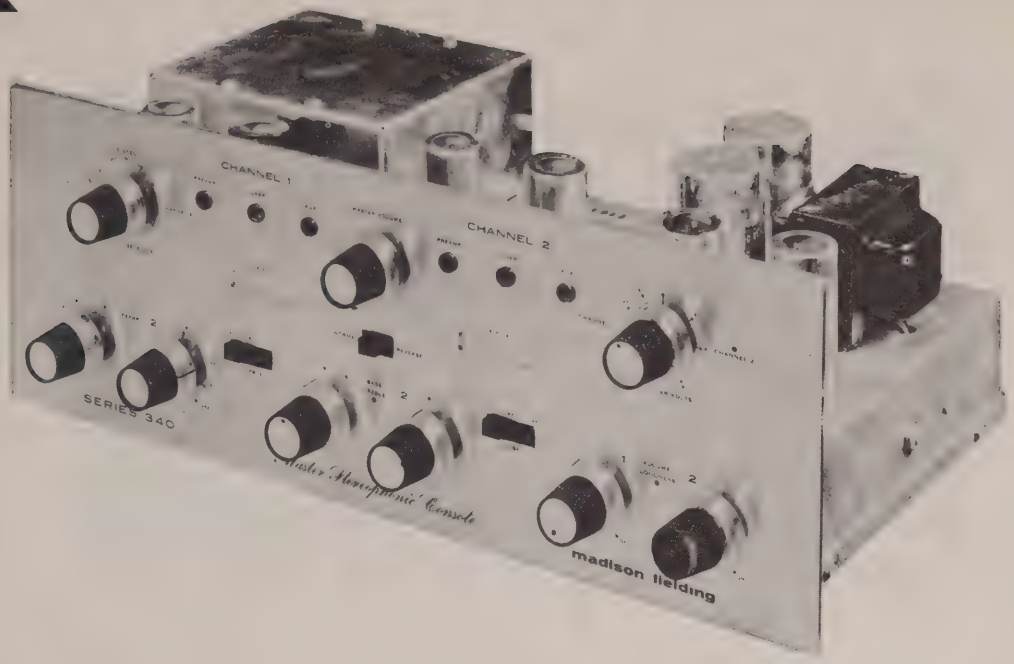
KNIGHT MODEL KN-140

PHOTOFACT* Folder

EIA ELECTRONIC INDUSTRIES ASSOCIATION MEMBER

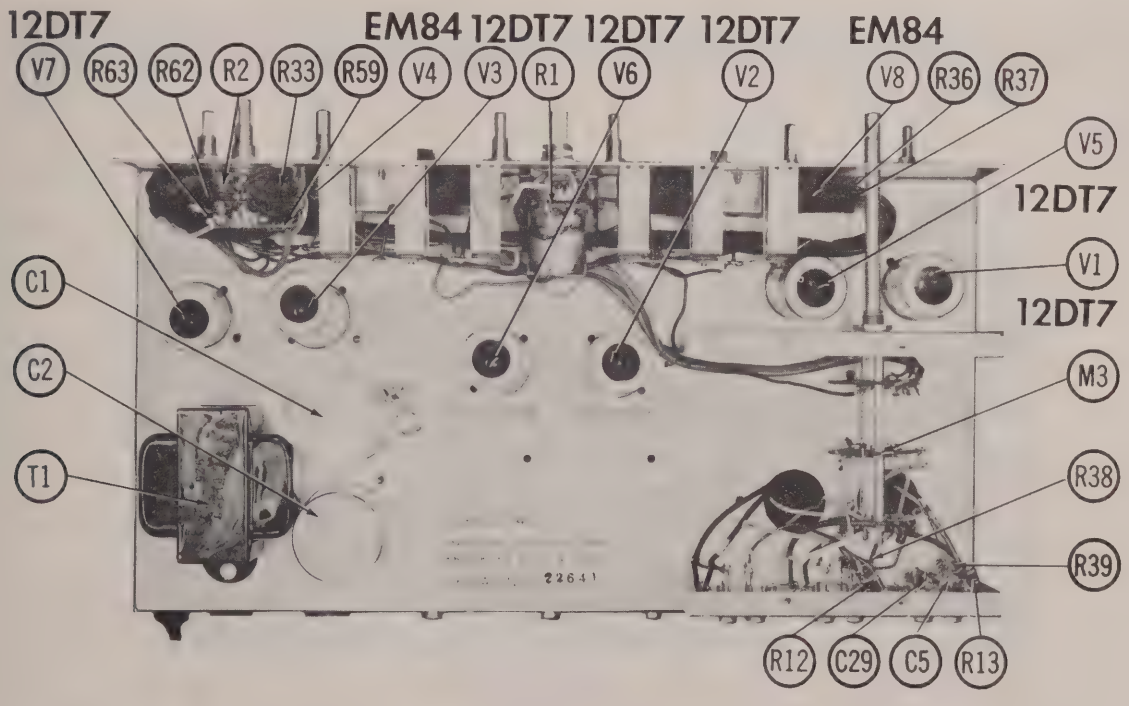
MADISON FIELDING
MODEL 340

MADISON FIELDING
MODEL 340



TRADE NAME	Madison Fielding Model 340
MANUFACTURER	Madison Fielding Corp., 863 Madison St., Brooklyn 21, N. Y.
TYPE SET	AC Operated 8 Tube Stereo Preamplifier
POWER SUPPLY	105 - 125 Volts AC, 60 Cycles RATING 28 Watts, .29 Amp. @117 Volts AC

MADISON FIELDING
MODEL 340



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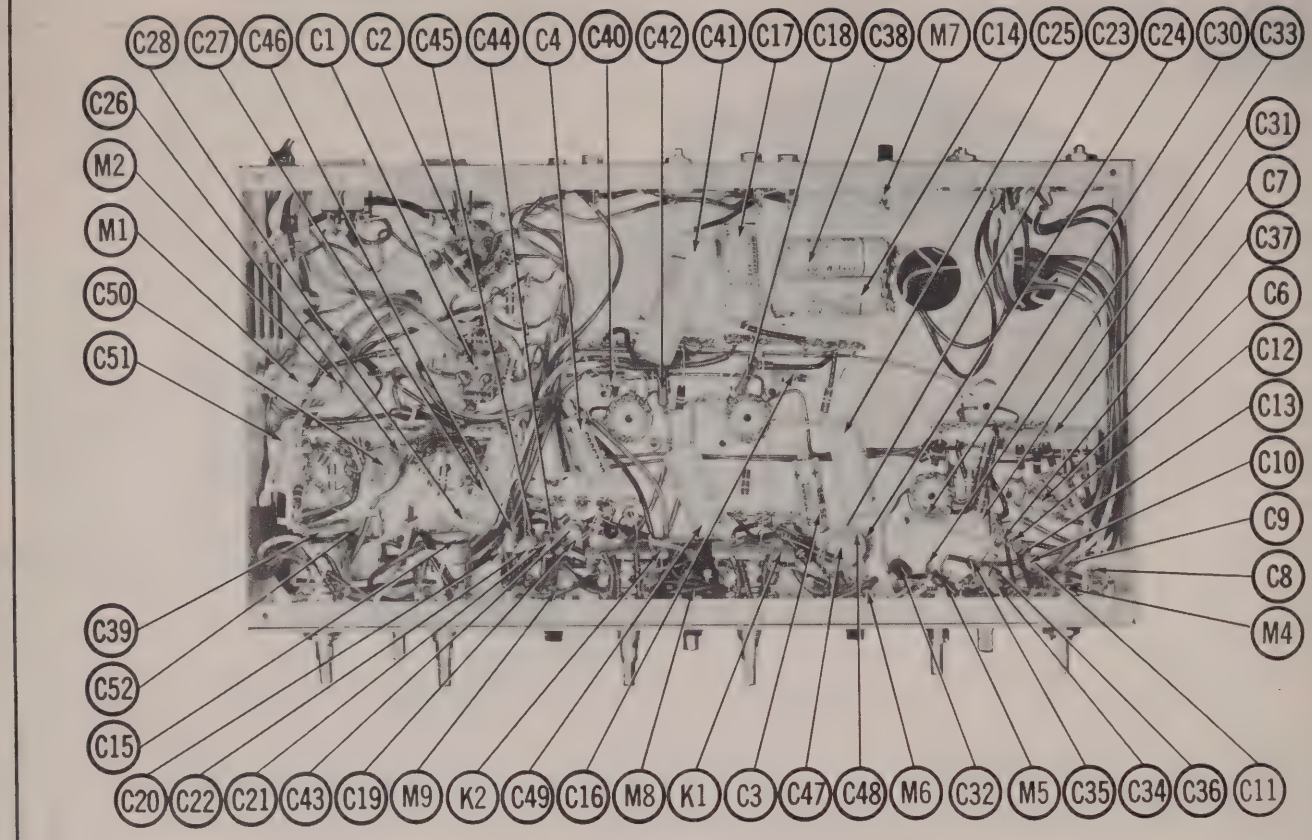
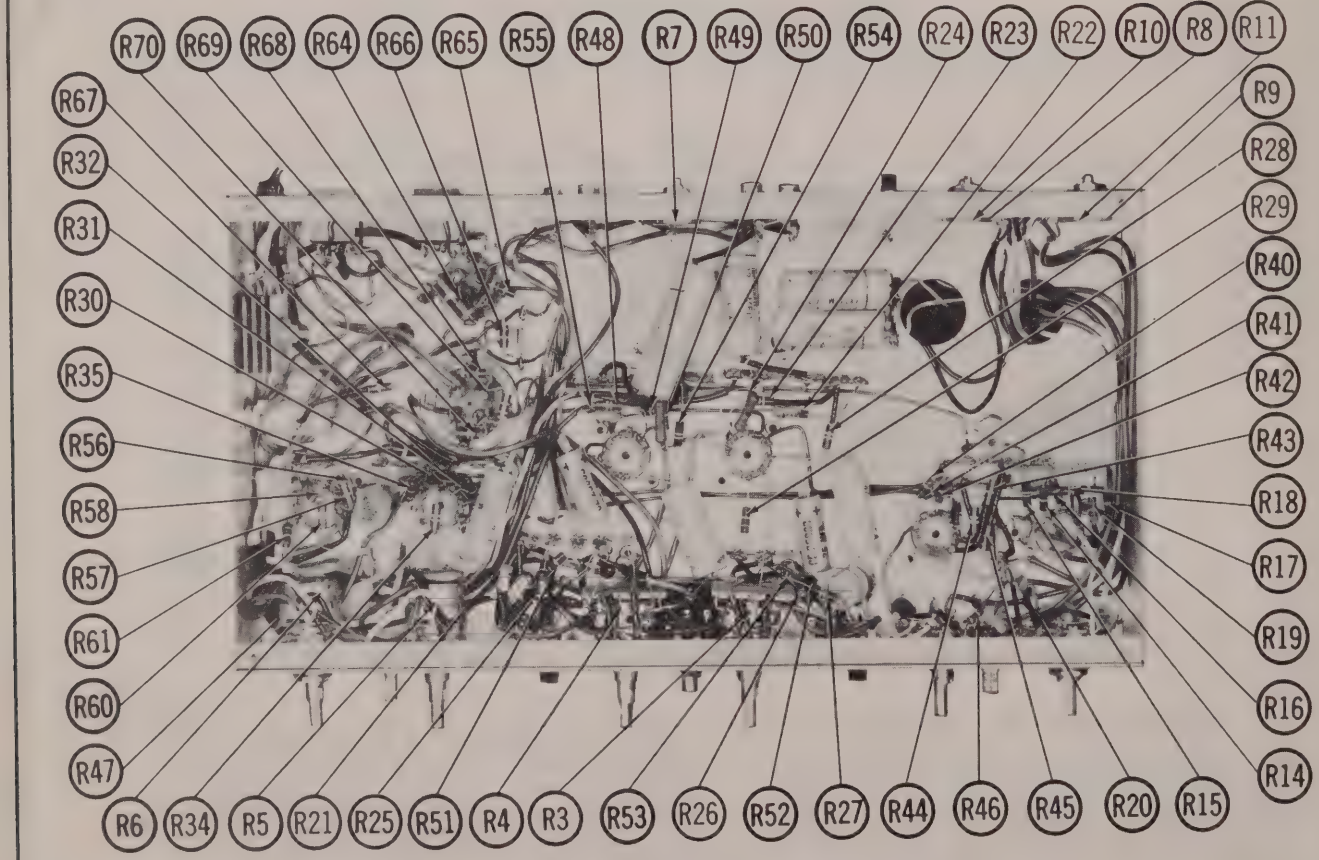
SET 449 FOLDER 12



CHASSIS BOTTOM VIEW – CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW – RESISTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Channel 1 Preamp.	12DT7	①
V2	Channel 1 AF Amp.	12DT7	①
V3	Channel 1 Cathode Follower-Channel 1 Indicator Amp.	12DT7	①
V4	Channel 1 Indicator	EM84	
V5	Channel 2 Preamp.	12DT7	①
V6	Channel 2 AF Amp.	12DT7	①
V7	Channel 2 Cathode Follower-Channel 2 Indicator Amp.	12DT7	①
V8	Channel 2 Indicator	EM84	

① Alternate types: 7025, 12AX7, ECC83

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Madison Fielding PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■40	250	CE-4X4025		D0034	FP327. 89 TC58	TMQ-116	TVLS-4538 *	
B	▲40	250							
C	40	250							
D	●4	250							
C2A	▲500	30	CE103103					TVL-2239	
B	▲1000	30							
C3	25	3	CE25003	SRE3V25	BBR25-3	TT3X25	ML25-3	TE-1055	
C4	25	3	CE25003	SRE3V25	BBR25-3	TT3X25	ML25-3	TE-1055	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA Madison Fielding PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	100		10%		NPO-SI 100	D6-101	L10T1	CNO-310	5GA-T1S 10%*	
C6	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C8	2200				BPD-0022	DD-222	BYA10D2	B-222	5HK-D22	
C9	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C10	220				SI 220	D6-221	L10T22	UC-5322	5GA-T22	
C11	330		10%		DI 330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C12	560		10%		DI 560	MD-561		JL-356	5GA-T56S 10%*	
C13	820				DI 820	DD-821	L10T82	B-382	5GA-T82	
C14	.22	200			P288N-22		CUB2P22	GEM-2022	2TM-P22	
C15	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C16	220				SI 220	D6-221	L10T22	UC-5322	5GA-T22	
C17	.22	200			P288N-22		CUB2P22	GEM-2022	2TM-P22	
C18	2200				SI 2200	D6-222	BYA10D22	B-222	5HK-D22	
C19	22		10%		NPO-SI 22	D6-220	L10Q22	CNO-422	5GA-Q22S 10%*	
C20	47		10%		NPO-SI 47	D6-470	L10Q47	CNO-447	5GA-Q47S 10%*	
C21	22		10%		NPO-SI 22	D6-220	L10Q22	CNO-422	5GA-Q22S 10%*	
C22	47		10%		NPO-SI 47	D6-470	L10Q47	CNO-447	5GA-Q47S 10%*	
C23	50000				BPD-05	DF-503	CUB6S5	GEM-615	5HK-S5	
C24	50000				BPD-05	DF-503	CUB6S5	GEM-615	5HK-S5	
C25	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C26	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C27	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C28	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C29	100		10%		NPO-SI 100	D6-101	L10T1	CNO-310	5GA-T1S 10%*	
C30	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C31	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C32	2200				BPD-0022	DD-222	BYA10D22	B-222	5HK-D22	
C33	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C34	220				SI 220	D6-221	L10T22	UC-5322	5GA-T22	
C35	330		10%		DI 330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C36	560		10%		DI 560	MD-561		JL-356	5GA-T56S 10%*	
C37	820				DI 820	DD-821	L10T82	B-382	5GA-T82	
C38	.22	200			P288N-22		CUB2P22	GEM-2022	2TM-P22	

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA Madison Fielding PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C39	20000				BPD-02	DD-02	BYB6S2	B-120	5HK-S2	
C40	220				SI 220	D6-221	L10T22	UC-5322	5GA-T22	
C41	.22	200			P288N-22		CUB2P22	GEM-2022	2TM-P22	
C42	2200				SI 2200	D6-222	BYA10D22	B-222	5HK-D22	
C43	22		10%		NPO-SI 22	D6-220	L10Q22	CNO-422	5GA-Q22S 10%*	
C44	47		10%		NPO-SI 47	D6-470	L10Q47	CNO-447	5GA-Q47S 10%*	
C45	22		10%		NPO-SI 22	D6-220	L10Q22	CNO-422	5GA-Q22S 10%*	
C46	47		10%		NPO-SI 47	D6-470	L10Q47	CNO-447	5GA-Q47S 10%*	
C47	50000				BPD-05	DF-503	CUB6S5	GEM-615	5HK-S5	
C48	50000				BPD-05	DF-503	CUB6S5	GEM-615	5HK-S5	
C49	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C50	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C51	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C52	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA Madison Fielding PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	1/2	RV-1013	B-60	AD47-500K-Z	Q13-133	■ UE3916S	Master Volume, Chan. 1
B	500K	1/2		SR-60	Not Req.	M13-133		Master Volume, Chan. 2
C	Shaft			Not Req.	FS-3	Not Req.		
D	Switch			KR-1	SWE-12	76-1		Off/On
R2A	500K	1/2	RV-1012			† QJ1099	UE3970	Record Voltage, Chan. 1
B	500K	1/2						Record Voltage, Chan. 2
R3A	1meg	1/2	RV-1010	F1-51		†† QJ1100	■■UE3850	Bass, Chan. 1
B	500K	1/2		R2-46				Treble, Chan. 1, Tap@250K
R4A	1meg	1/2	RV-1010	F1-51		†† QJ1100	■■UE3850	Bass, Chan. 2
B	500K	1/2		R2-46				Treble, Chan. 2, Tap@250K
R5A	100K	1/2	RV-1011					Volume,Chan. 1, Tap@30K
B	Switch							Loudness Switch, Chan. 1
R6A	100K	1/2	RV-1011					Volume,Chan. 2, Tap@30K
B	Switch							Loudness Switch, Chan. 2
R7	500K	1/4	RV-5041	JP-504	48M-500K-S			Balance, Chan. 3
R8	500K	1/4	RV-5041	JP-504	48M-500K-S			Aux. Chan. 1
R9	500K	1/4	RV-5041	JP-504	48M-500K-S			Preamp. Chan. 1
R10	500K	1/4	RV-5041	JP-504	48M-500K-S			Aux. Chan. 2
R11	500K	1/4	RV-5041	JP-504	48M-500K-S			Preamp. Chan. 2

† "Concentrikit" equivalent: K-2 Kit with base elements & shafts: B17-133, P1-024 (Panel)
(Not available as a factory assembled unit.) B17-133, R1-105 (Rear)

†† "Concentrikit" equivalent: K-2 Kit with base elements & shafts: B11-137, P1-024 (Panel)
(Not available as a factory assembled unit) B19-133X, R1-105 (Rear)

■ "STA-LOC" equivalent: FA55A, RU55A, CS3500, US41.

■■ "STA-LOC" equivalent: FA55R, DS687, RU55R, IS1125

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Madison Fielding PART No.	NOTES
R12	100K			
R13	47K			
R14	2. 2meg			
R15	220K			
R16	2200Ω			
R17	2. 2meg			
R18	220K			
R19	2700Ω			
R20	150K			
R21	10K			
R22	220K			
R23	220K			
R24	2700Ω			
R25	3. 3meg			
R26	220K			
R27	220K			
R28	100K			
R29	2700Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	Madison Fielding PART No.	NOTES
R30	1meg			
R31	2200Ω			
R32	47K			
R33	6800Ω			
R34	220K			
R35	2700Ω			
R36	3.3meg			
R37	470K			
R38	100K			
R39	47K			
R40	2.2meg			
R41	220K			
R42	2200Ω			
R43	2.2meg			
R44	220K			
R45	2700Ω			
R46	150K			
R47	10K			
R48	220K			
R49	220K			
R50	2700Ω			
R51	3.3meg			
R52	220K			
R53	220K			
R54	100K			
R55	2700Ω			
R56	1meg			
R57	2200Ω			
R58	47K			
R59	6800Ω			
R60	220K			
R61	2700Ω			
R62	3.3meg			
R63	470K			
R64	15Ω	2		
R65	47Ω			
R66	47Ω			
R67	1000Ω			
R68	3300Ω			
R69	3300Ω			
R70	10K			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Madison Fielding PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117 V @ .29A	420 VCT @ .015A	26V @ .3A	TP-1012						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1.35A									

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Madison-Fielding PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.008A	SR1003		SD-94			
M2	.275A	SR1004	1016		304B		

MISCELLANEOUS

ITEM No.	PART NAME	Madison Fielding PART No.	NOTES
M3	Switch	SF-1014	Selector (Rotary Wafer Type)
M4	Switch	SF-1015	Preamp. #1 (Rotary Wafer Type)
M5	Switch	SF-1015	Preamp. #2 (Rotary Wafer Type)
M6	Switch	SS-1009	Rumble (DPTT, Slide Type)
M7	Switch	SS-1001	Mixing (SPST, Slide Type)
M8	Switch	SS-1006	Normal-Reverse (DPDT, Slide Type)
M9	Switch	SS-1009	Noise (DPTT, Slide Type)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Madison Fielding PART No.	REPLACEMENT DATA
K1	Tone Compensation	100mmf, 4700mmf, 4700mmf, 1000Ω, 100K, 100K, 470K		Centralab PC-190 Sprague TC-1
K2	Tone Compensation	100mmf, 4700mmf, 4700mmf, 1000Ω, 100K, 100K, 470K		Centralab PC-190 Sprague TC-1

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

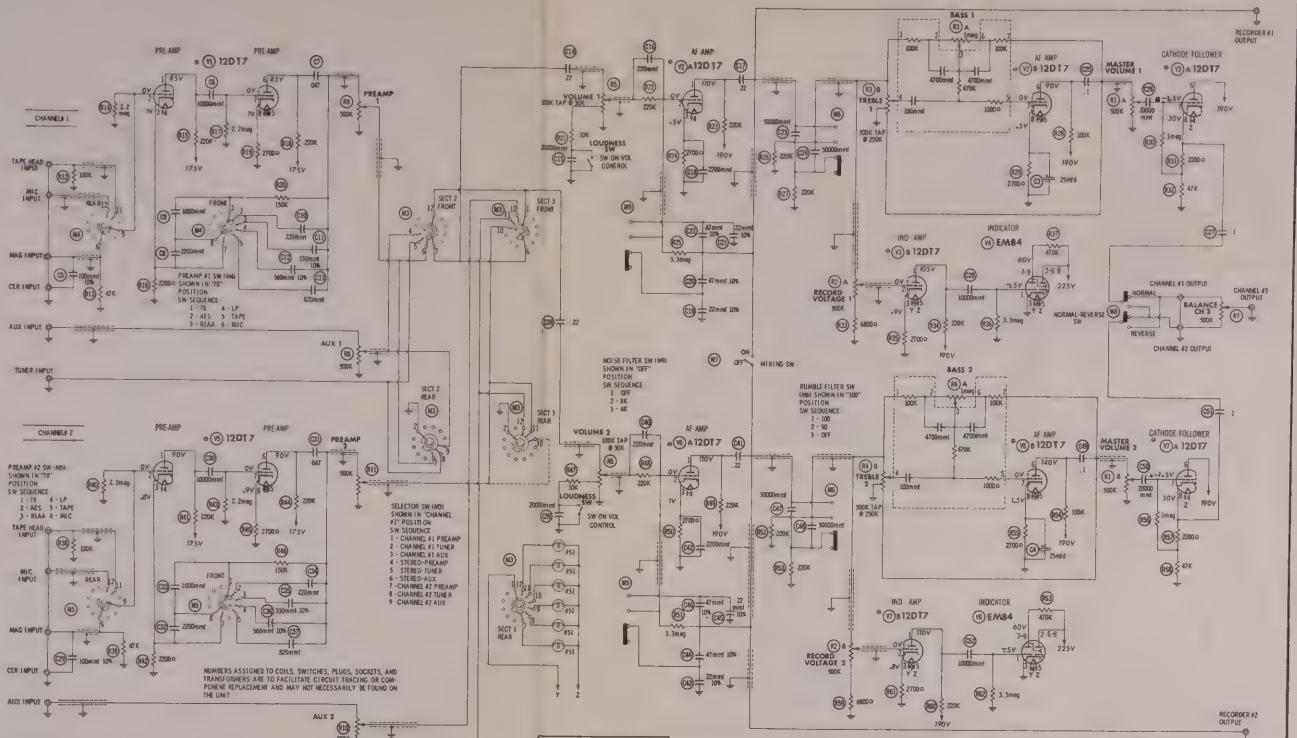
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DT7	†235K	47K	2200Ω	9.5Ω	12Ω	*235K	2.2meg	2700Ω	12Ω
V2	12DT7	†225K	220K	2700Ω	0Ω	9.5Ω	†105K	1.7meg	2700Ω	5.5Ω
V3	12DT7	†225K	6800Ω	2700Ω	40Ω	40Ω	†760Ω	1meg	49K	40Ω
V4	EM84	3.3meg	†1000Ω	0Ω	40Ω	40Ω	†1000Ω	†470K	†1000Ω	†470K
V5	12DT7	†235K	47K	2200Ω	9.5Ω	12Ω	*235K	2.2meg	2700Ω	12Ω
V6	12DT7	*225K	220K	2700Ω	9.5Ω	0Ω	†100K	1.7meg	2700Ω	5.5Ω
V7	12DT7	†225K	6800Ω	2700Ω	40Ω	40Ω	†760Ω	1meg	49K	40Ω
V8	EM84	3.3meg	†1000	0Ω	40Ω	40Ω	†1000Ω	†470K	†600Ω	†470K

† MEASURED FROM OUTPUT OF ALL
* MEASURED FROM PIN 8 OF V5.
MEASURED FROM PIN 8 OF V7.

@ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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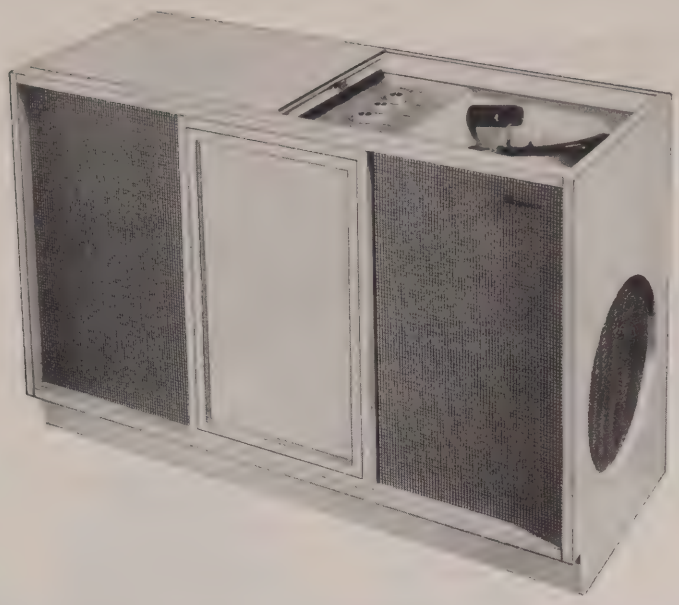
MADISON FIELDING MODEL 340

PHOTOFACT* Folder

MAGNAVOX CHASSIS
AMP-185AA, BB

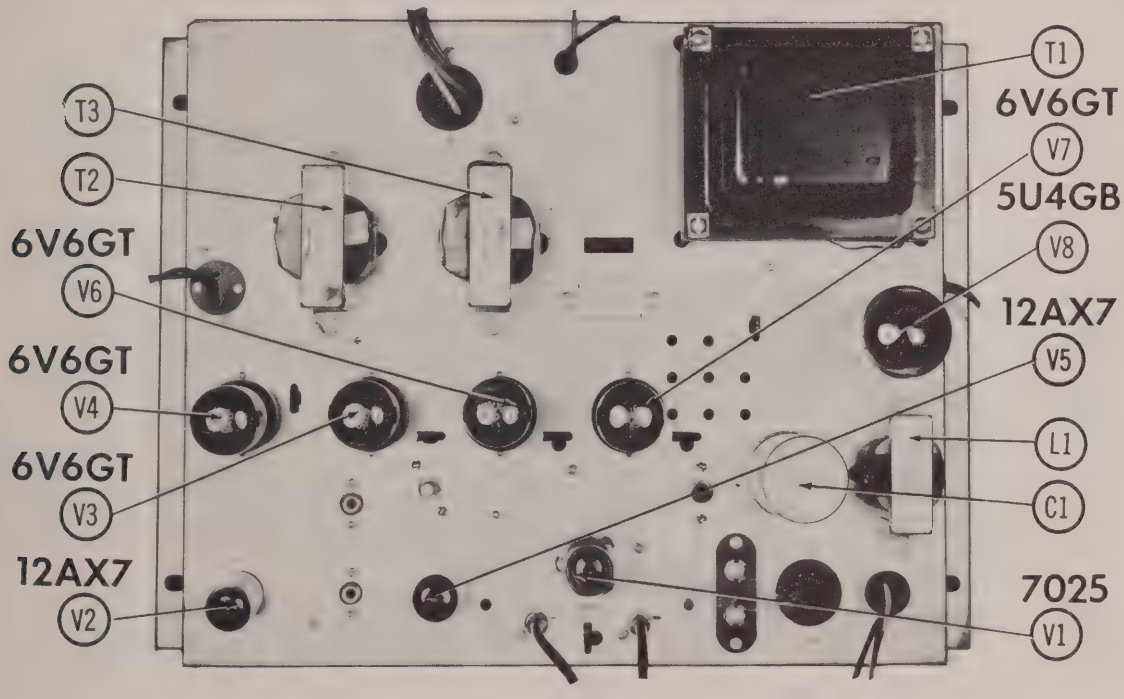
MAGNAVOX CHASSIS
AMP-185AA, BB



TRADE NAME	Magnavox Chassis Amp-185AA, Amp-185BB, Control Unit #700699-3
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Indiana
TYPE SET	AC Operated 8 Tube Stereo Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 110 Watts, 1 Amp. @117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR COLLARO TC-340-E – PHOTOFACT SET 408 FOLDER 6

MAGNAVOX CHASSIS
AMP-185AA, BB



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Channel 1 Preamp. - Channel 2 Preamp.	7025	
V2	Channel 1 AF Amp. - Channel 1 Phase Inv.	12AX7	
V3	Channel 1 Output	6V6GT	
V4	Channel 1 Output	6V6GT	
V5	Channel 2 AF Amp. - Channel 2 Phase Inv.	12AX7	
V6	Channel 2 Output	6V6GT	
V7	Channel 2 Output	6V6GT	
V8	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Magnavox PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	270021-78	AFH4-92-50	D0174	FP447	TMT-37	TVL-4773	
B	■30	450					TD-20-250		
C	▲20	350							
D	20	250							
C2	20	25	270027-28	SRE25V20	BBR20-25	TT25X20	TD-20-150	TVA-1410	
C3	20	25	270027-28	SRE25V20	BBR20-25	TT25X20	TD-20-150	TVA-1410	
C4	20	25	270027-28	SRE25V20	BBR20-25	TT25X20	TD-20-150	TVA-1410	
C5	16	25NP	270040-4	NP-PRS30V20	BR3015 † BR3015	TCN2516	TD-30-150 † TD-30-150	TVAS-1204. 3*	

† Connect negative leads together.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

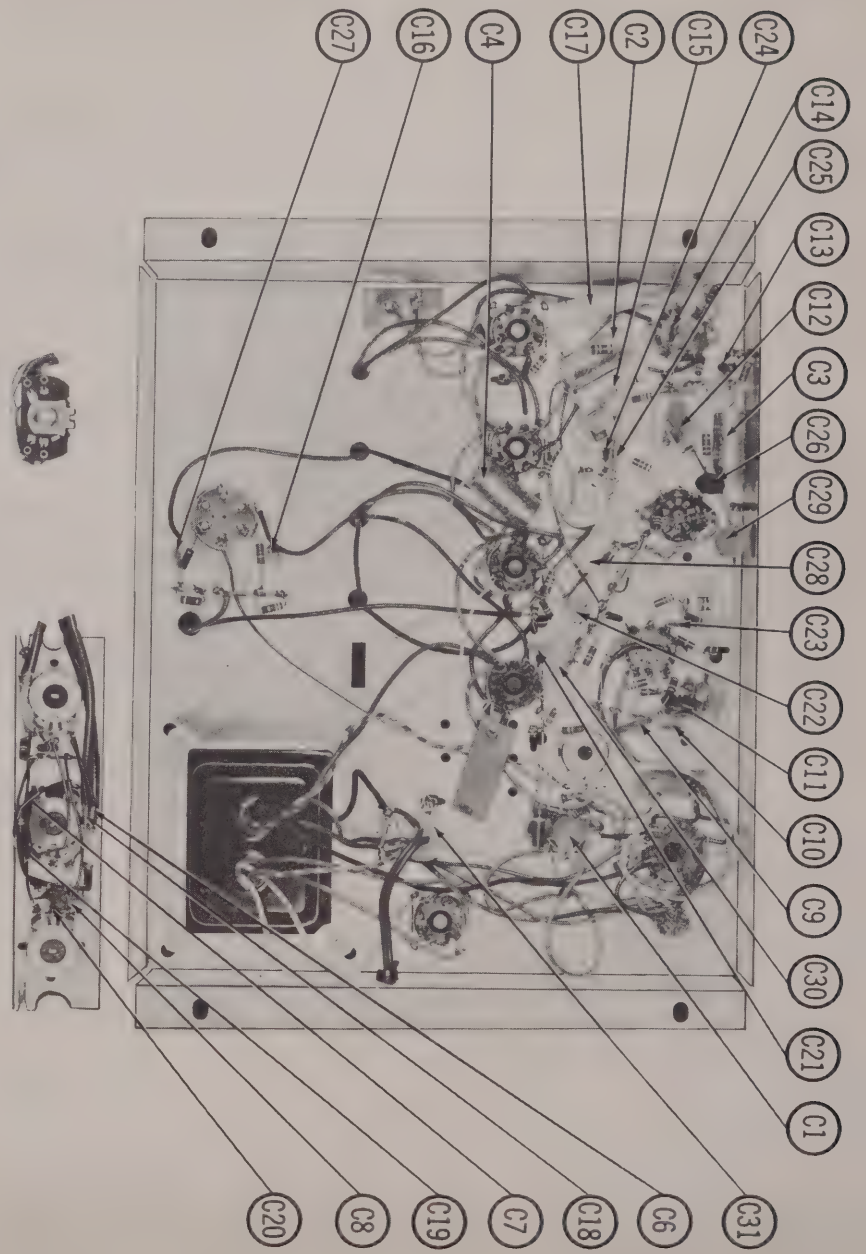
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA Magnavox PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	220			250218-5	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C7	68			250224-426	DI-68	DD-680	L10Q68	CNO-468	MS-468	
C8	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C9	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C10	5000			250175-30	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C11	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C12	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	Note 1
C13	100			250218-22	SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C14	1000		10%	250218-12	DI-1000		1R5D1	JL-210	5GA-DIS 10%*	
C15	.047	400		250211-11	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C16	470			250218-12	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	Note 2
C17	.047	400		250211-11	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C18	220			250218-5	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C19	68			250224-426	DI-68	DD-680	L10Q68	CNO-468	MS-468	
C20	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C21	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C22	5000			250175-30	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C23	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C24	220			250218-5	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C25	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	Note 1
C26	1000		10%	250218-12	DI-1000		1R5D1	JL-210	5HK-DIS 10%*	
C27	1000			250218-15	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	Note 3
C28	.047	400		250211-11	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C29	100			250218-22	BPD-0001	DD-101	L10T1	B-310	5GA-T1	
C30	.047	400		250211-11	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C31A	10000	1400		250219-3	DAC-27	DD16-103	HVE16S1	2HV-110	20HKB-S1	
B	10000	1400			DAC-27	DD16-103	HVE16S1	2HV-110	20HKB-S1	
C32	2.0	50								
C33	2.0	50								

Note 1. Not used in Ch. Amp-185BB.
Note 2. Some versions may use a 1000mmf in this application.
Note 3. Some versions may use a 470mmf in this application.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Magnavox PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	3.3meg	½	220151-4	BT-180				Loudness, Chan. 1. Taps
B	3.3meg	½		STR-180				Loudness, Chan. 2. Taps
R2A	3meg	½	220151-6	B-85		Q13-140 〉	■ UE3971	Bass, Chan. 1
B	3meg	½		SR-85		M13-140 〉		Bass, Chan. 2
R3A	1meg	½	220151-5	B-69	AD47-1meg-Z	Q13-137 〉		Treble, Chan. 1
B	1meg	½		SR-69	Not Req.	M13-137 〉	† UE3913	Treble, Chan. 2
C	Shaft			Not Req.	FS-3	Not Req.		
R4A	500K	½	220132-17	BX-59	B47-500K-S	B11-133	TA55L	Balance, Chan. 2
B	Shaft			Not Req.	Not Req.	TM-2	Not Req.	
R5A	750Ω	½	220654-2	AB-5	B47-750-S	Q11-105	PTA751L	Hum Balance
B	Shaft			AK-1	Not Req.	Not Req.	Not Req.	

■ "STA-LOC" equivalent: FA36A, RU36A, CS3500
† "STA-LOC" equivalent: FA16A, RU16A, CS3500

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Magnavox PART No.	NOTES
	OHMS	WATT		
R6	220K		230104-90	
R7	100K		230104-86	
R8	4.7meg		230104-106	
R9	47K		230104-82	
R10	470K		230104-94	
R11	8200Ω		230104-73	
R12	10K		230104-74	
R13	15K		230104-76	
R14	470K		230104-94	
R15	47K		230104-82	
R16	470K		230104-94	
R17	3300Ω		230104-68	
R18	220Ω		230104-54	
R19	470Ω		230104-58	
R20	2200Ω		230104-66	
R21	22K		230104-78	
R22	470K		230104-94	
R23	6800Ω		230104-72	
R24	470K		230104-94	
R25	470K		230104-94	
R26	220K		230104-90	

ITEM No.	RATING		Magnavox PART No.	NOTES
	OHMS	WATT		
R27	100K		230104-86	
R28	4.7meg		230104-106	
R29	47K		230104-82	
R30	470K		230104-94	
R31	8200Ω		230104-73	
R32	10K		230104-74	
R33	15K		230104-76	
R34	47K		230104-82	
R35	470K		230104-94	
R36	3300Ω		230104-68	
R37	220Ω		230104-54	
R38	470Ω		230104-58	
R39	5600Ω		230104-71	
R40	22K		230104-78	
R41	470K		230104-94	
R42	6800Ω		230104-72	
R43	470K		230104-94	
R44	470K		230104-94	
R45	100K		230104-86	
R46	100K	1	230104-86	
R47	125Ω	10	240071-6	

FILTER CHOKE

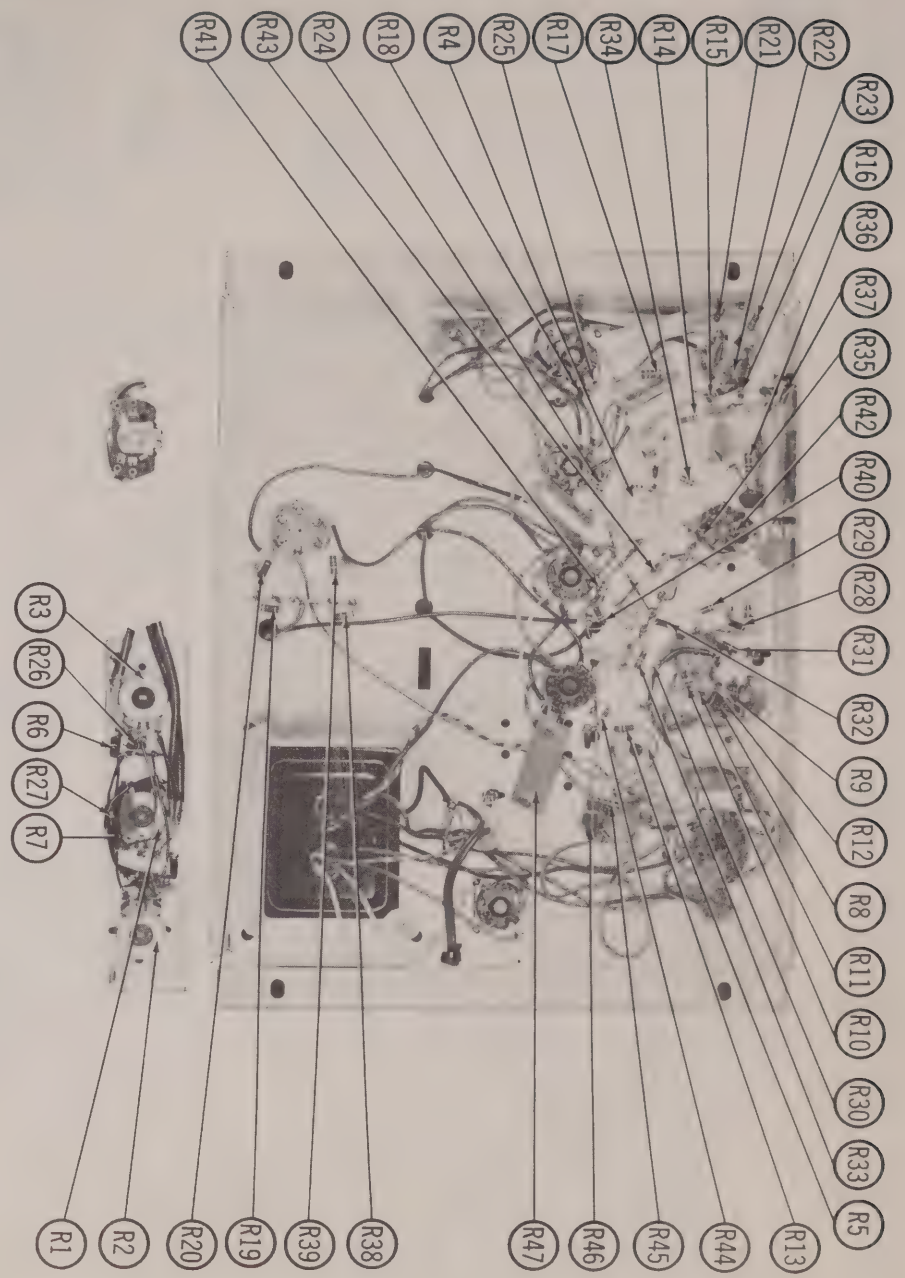
ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	Magnavox PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L1	.150A	56Ω	1HY	320041-2	26C41	C-2994	F-804	C-2327	26C41	C-24X

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Magnavox PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ 1A	580 VCT @.150A	5V@ 3A	300173-1①	26R90	P-3055			26R90	R-52BC
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ 2.7A	6.3V								

① Used in Ch. Amp. -185AA. Ch. Amp. 185-BB uses Part #300701-1.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Magnavox PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6000Ω CT	4-6Ω	320819-1	22S58	A-2935	AU-609	A-3870	22S58	S-55X	
T3	6000Ω CT	4-6Ω	320819-1	22S58	A-2935	AU-609	A-3870	22S58	S-55X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Magnavox PART No.	QUAM PART No.	
SP1	15"	PM	5-6Ω	583903①		① Parallel And Phase
SP2	15"	PM	5-6Ω	583903①		
SP3	8"	PM	5-6Ω	583865①	8A4Z5.6①	
SP4	8"	PM	5-6Ω	583865①	8A4Z5.6①	
SP5	5"	PM	3-4Ω	580038-1①	5A07 ①	
SP6	5"	PM	3-4Ω	580038-1①	5A07 ①	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	Magnavox PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		13-TB *				* Includes needle & mounting mechanism.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

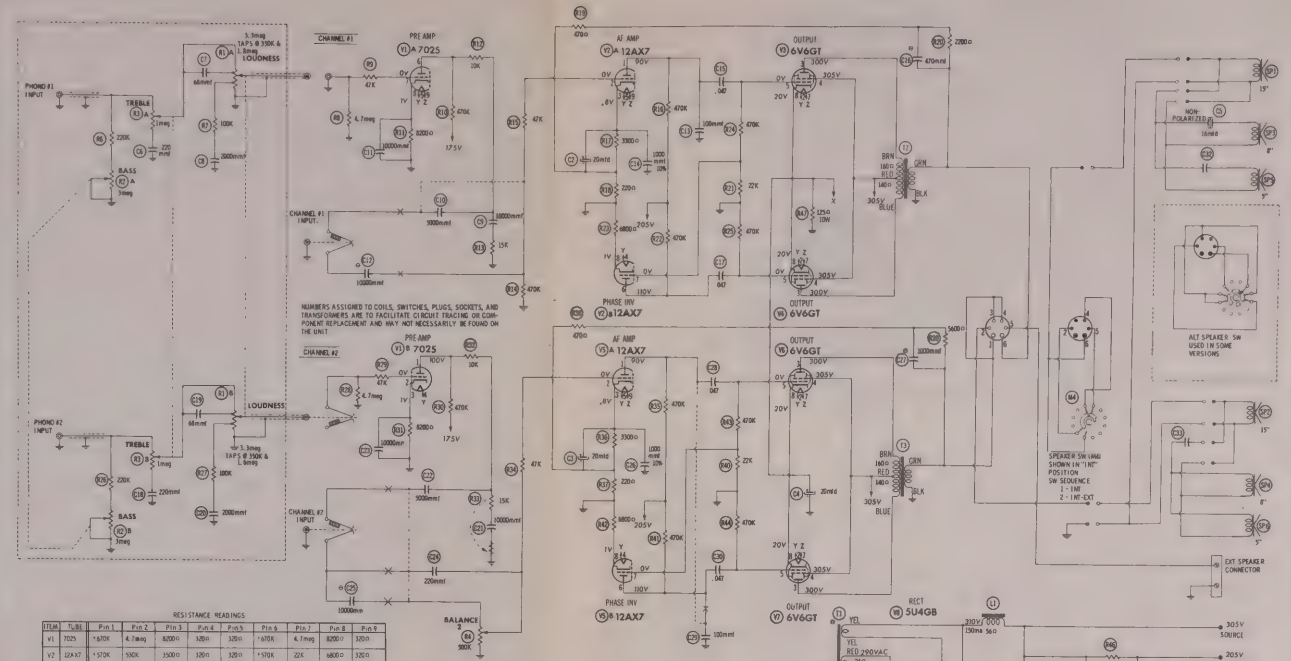
ITEM No.	REPLACEMENT DATA			REMARKS
	Magnavox PART No.	JENSEN PART No.	WALCO PART No.	
M2	(78RPM)	† E-98 or ♦ E-98D	† W-102S *	* Includes Cartridge † Jewel ♦ Diamond
	(LP)	† E-98X or ♦ E-98XD	† W-101STS *	

MISCELLANEOUS

ITEM No.	PART NAME	Magnavox PART No.	NOTES
M3	Lamp		#44
M4	Switch		Speakers: Internal-Internal, External(Rotary Wafer Type)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	*670K	4.7meg	8200Ω	320Ω	320Ω	*670K	4.7meg	8200Ω	320Ω
V2	12AX7	*570K	510K	3500Ω	320Ω	320Ω	*570K	22K	6800Ω	320Ω
V3	6V6GT	NC	320Ω	*215Ω	156Ω	490K	TP	320Ω	125Ω	
V4	6V6GT	NC	320Ω	*200Ω	156Ω	470K	TP	320Ω	125Ω	
V5	12AX7	*570K	47K	3500Ω	320Ω	320Ω	*570K	22K	6800Ω	320Ω
V6	6V6GT	NC	320Ω	*215Ω	156Ω	490K	TP	320Ω	125Ω	
V7	6V6GT	NC	320Ω	*200Ω	156Ω	470K	NC	320Ω	125Ω	
V8	5U4GB	NC	1	NC	260Ω	NC	260Ω	NC	1	

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
* MEASURED FROM PIN 2 OF V8.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter.
2. AC voltages measured at 1000 ohms per volt.
3. Socket connections are shown as bottom views.
4. Measured values are from socket pin to common negative.
5. Line voltage maintained at 117 volts for voltage readings.
6. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
7. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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MAGNAVOX CHASSIS AMP-185AA, BB

PHOTOFACT* Folder

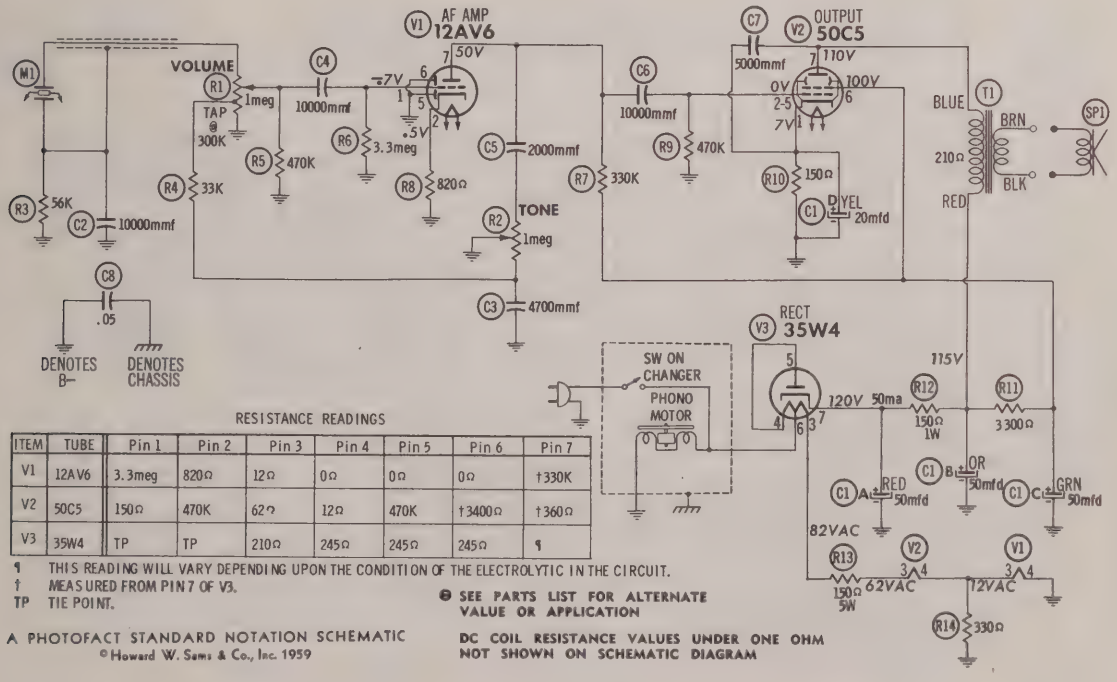
EIA

MOTOROLA MODELS
3F13B, W (Ch. HS-668)

MOTOROLA MODELS
3F13B, W (Ch. HS-668)

TRADE NAME	Motorola Models 3F13B, 3F13W (Ch. HS-668)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC Operated 3 Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 28 Watts, .30 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER BR4RC - SEE SIMILAR MONARCH UA8 - PHOTOFACT SET 381 FOLDER 11.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AV6	3.3meg	820Ω	12Ω	0Ω	0Ω	0Ω	†330K
V2	50C5	150Ω	470K	62Ω	12Ω	470K	†3400Ω	†360Ω
V3	35W4	TP	TP	210Ω	245Ω	245Ω	245Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V3.
TP TIE POINT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MOTOROLA MODELS
3F13B, W (Ch. HS-668)
SET 449 FOLDER 14

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AV6	
V2	Output	50C5	
V3	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	23K642129 ①		BBRQ55515C		TMQ-33	TVLS-4425.1*	
B	50	150							
C	50	150							
D	20	25							

① Alternate Part #23K642742. * Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C3	4700			21R120149	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C4	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C5	2000			21R121106	BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C6	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	5000			21R122915	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C8	.05	400		8K128690	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	18K641499	BT-73	A47F-1meg	Q13-137X	UT438	Volume, Tap ② 300K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	1meg	½	18K641498	B-68	A47-1meg-S	Q17-137	U52	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MOTOROLA PART No.	NOTES
R3	56K		6K127541	
R4	33K		6K127632	
R5	470K		6K121279	
R6	3.3meg		6K121278	
R7	330K		6K128227	
R8	820Ω		6K121302	
R9	470K		6K121279	
R10	150Ω		6K124797	
R11	3300Ω		6K121725	
R12	150Ω	1	6K128232	
R13	150Ω	5	17K636326	
R14	330Ω		6K127940	

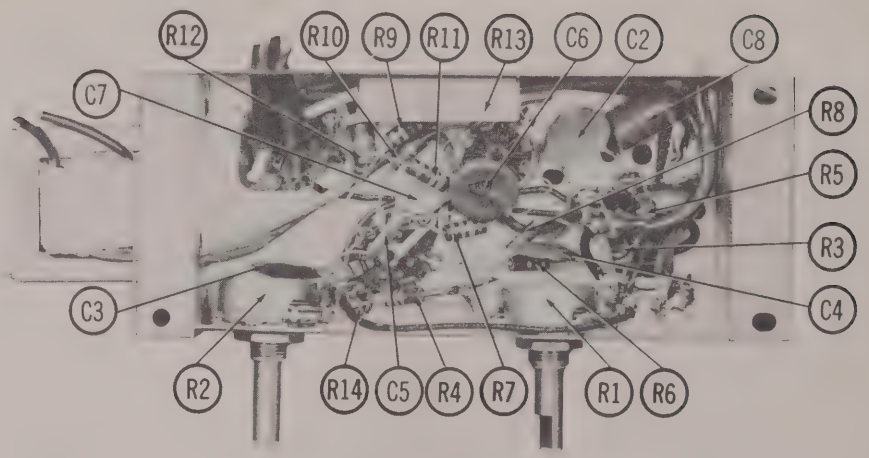
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2600Ω	3-4Ω	25C641522	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	50K641623	5A07	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA MOTOROLA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M1		*93-TB				* Includes needles and mounting mechanism

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA MOTOROLA PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2			*† W-201TPS or *† ♦ W-201DS	* Includes cartridge † Jewel ♦ Diamond

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36B641520	Volume
Knob	36K641730	Tone
Cabinet	1V642004	Blue, Model 3F13B
Cabinet	1V641483	White, Model 3F13W
Handle	55K641852	White

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

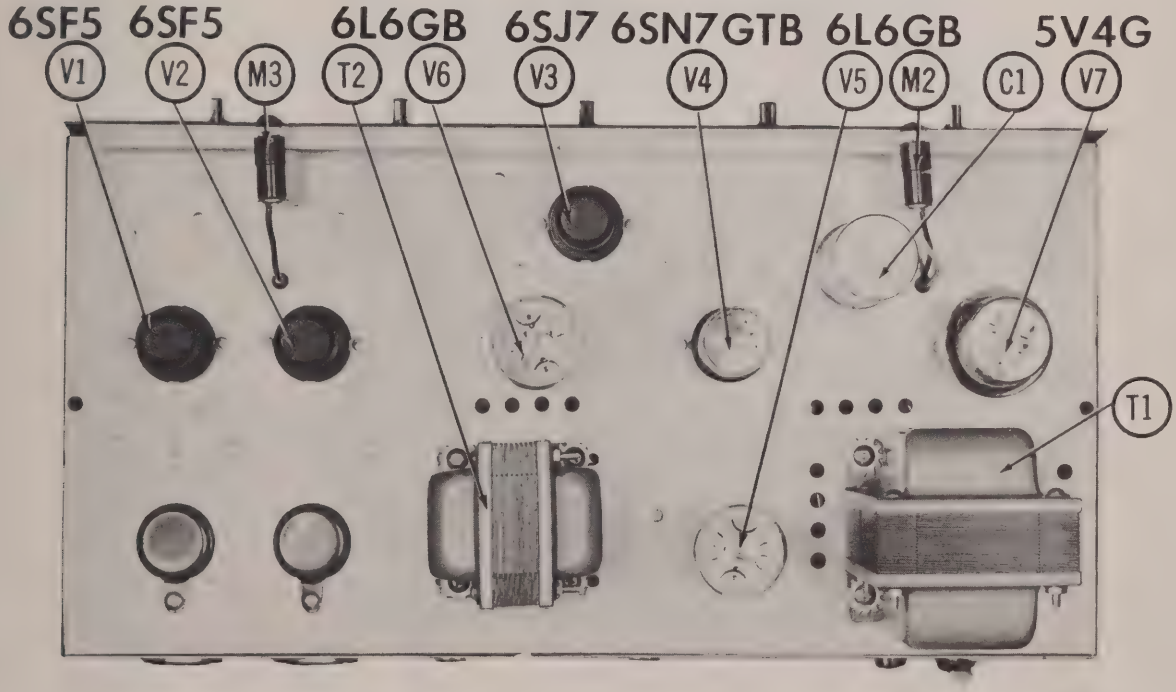
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

NEWCOMB MODEL H-15

NEWCOMB
MODEL H-15

TRADE NAME	Newcomb Model H-15
MANUFACTURER	Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, California
TYPE SET	AC Operated 7 Tube 15 Watt Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 94 Watts, .88 Amp. @117 Volts AC

NEWCOMB
MODEL H-15



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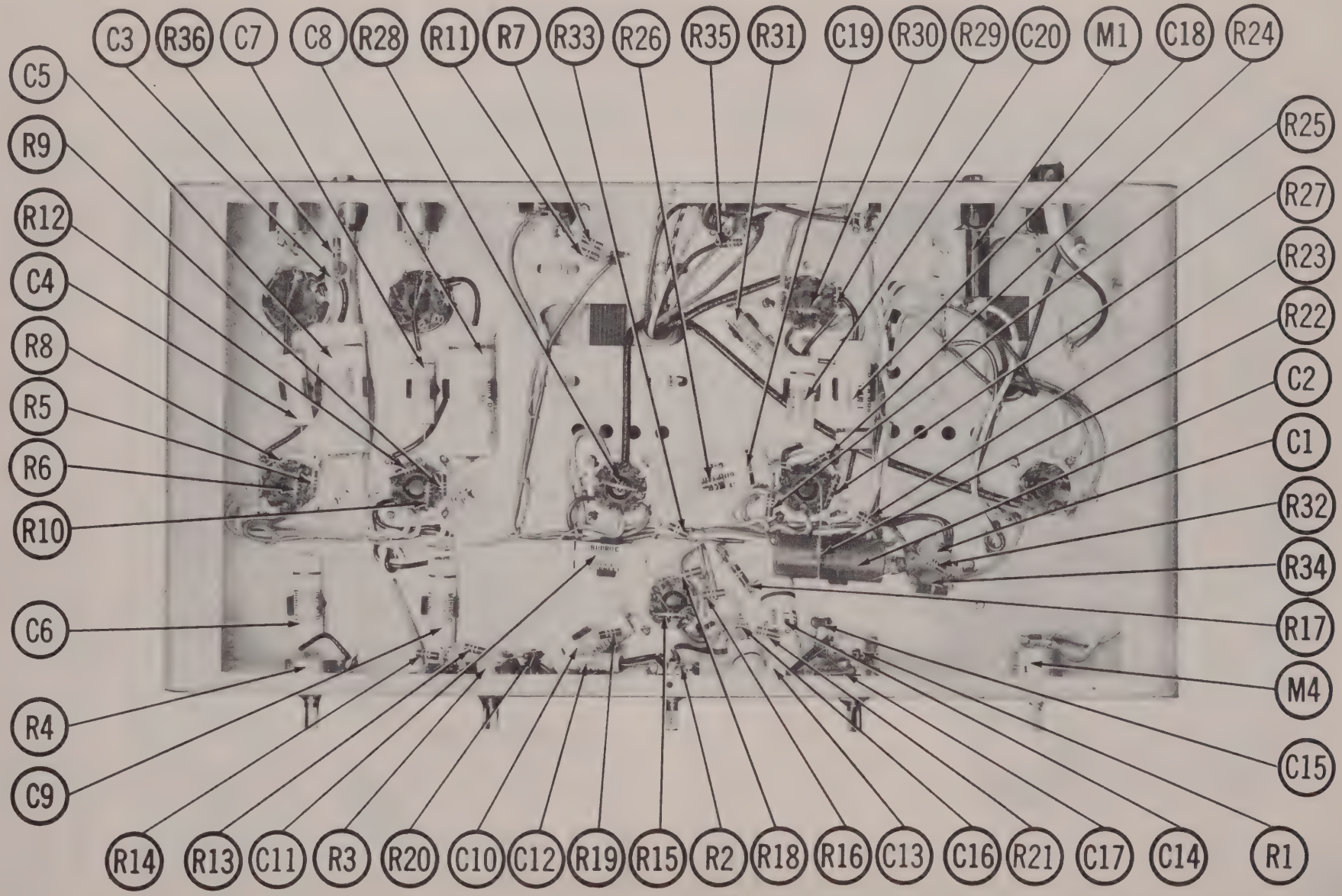
J114

SET 449 FOLDER 15



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mike 1 Preamplifier	6SF5	
V2	Mike 2 Preamplifier	6SF5	
V3	AF Amplifier	6SJ7	
V4	AF Amp. -Phase Inv.	6SN7GTB	
V5	Output	6L6GB	
V6	Output	6L6GB	
V7	Rectifier	5V4G	5Z4 *

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA NEWCOMB PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	475	CE-30	AFH4-19-10	D0179.3	FP474.5 TC36	TMQ-123	TVLS-4825*	
B	■10	475							
C	▲10	475							
D	25	50							
C2	8	500		PRS500V8	BR850	TC81	TD-8-500	TVA-1902	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA NEWCOMB PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.004	600			P688N-004	D6-402	CUB6D4	GEM-624	6TM-D4	
C4	.02	600			P688N-02	DD-203	CUB6S2	GEM-612	6TM-S2	
C5	.5	400			P488N-5		CUB4P5	GEM-405	4TM-P5	
C6	.05	600			P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	
C7	.02	600			P688N-02	DD-203	CUB6S2	GEM-612	6TM-S2	
C8	.5	400			P488N-5		CUB4P5	GEM-405	4TM-P1	
C9	.05	600			P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	
C10	.05	600			P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	
C11	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C12	.02	600			P688N-02	DD-203	CUB6S2	GEM-612	6TM-S2	
C13	.02	600			P688N-02	DD-203	CUB6S2	GEM-612	6TM-S2	
C14	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C15	470		10%		DI 470	D6-471		JL-347	5GA-T47S 10%*	
C16	.05	600			P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	
C17	1500		10%		DI 1500			JL-215	5GA-D15S 10%*	
C18	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C19	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C20	.05	600			P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA NEWCOMB PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5meg	½	RV-57					Bass
B	5meg	½						Bass
R2	6meg	½	RV-60					Treble, Tap ⓐ 1meg
R3A	1meg	½	RV-83	BT-71	A47F5-1meg	QVC-539X	UT-443	Channel 2, Tap ⓐ 500K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	500K	½	RV-41	B-60	A47-500K-Z	Q13-133	U48	Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	NEWCOMB PART No.	NOTES
R5	270K			
R6	270K			
R7	180K			
R8	18meg			
R9	270K			
R10	270K			
R11	180K			
R12	18meg			

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	NEWCOMB PART No.	NOTES
R13	270K			Note 1
R14	270K			Note 1
R15	10meg			
R16	560K			
R17	100K			
R18	3.3meg			
R19	270K			
R20	560K			
R21	680K			
R22	120K			
R23	270K			
R24	5600Ω			
R25	560K			
R26	270K			
R27	5600Ω			
R28	270K			
R29	33K			
R30	270K			
R31	250Ω	5		
R32	39K			
R33	100K			Note 2
R34	2200Ω	1		
R35	180K			
R36	100K			

Note 1. Some versions may use 330K in this application.

Note 2. Some versions may use 33K in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .88A	650 VCT ⓐ .120A	5V ⓐ 2A	TR-200 ①	24R05U			PC8422	24R05U	R-14A
	SEC. 3	SEC. 4	SEC. 5							
	6.3 VCT ⓐ 3.7A									

① Alternate Part #TR-116

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5300Ω CT	500Ω Taps ⓐ 70V, 250Ω, 16Ω, 8Ω, 4Ω	TR-132							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA NEWCOMB PART No. FUSE	NEWCOMB PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	1A 250V S/B			313001. (1A 125V S/B)	341001	MDL1	HKP

MISCELLANEOUS

ITEM No.	PART NAME	NEWCOMB PART No.	NOTES
M2	Lamp		#51
M3	Lamp		#51
M4	Switch		Power On-Off (SPST, Rotary Snap Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

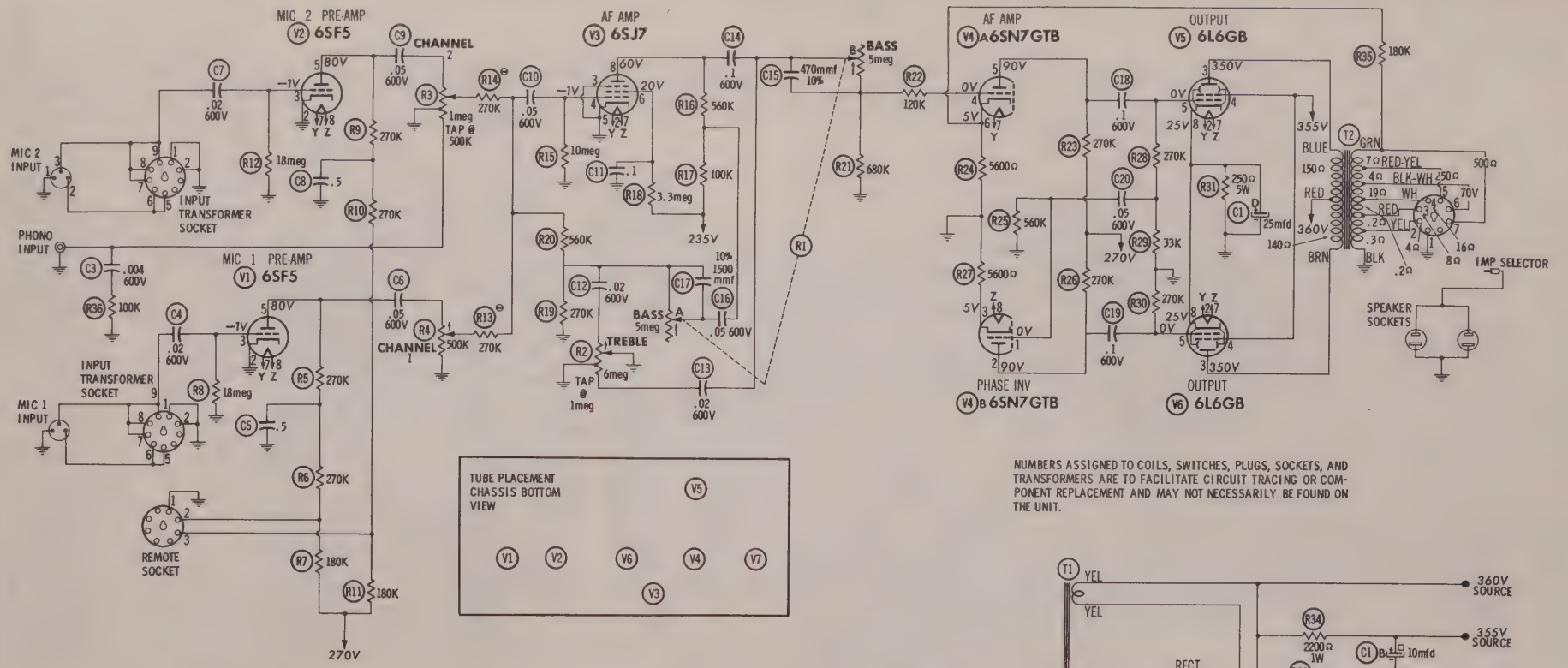
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

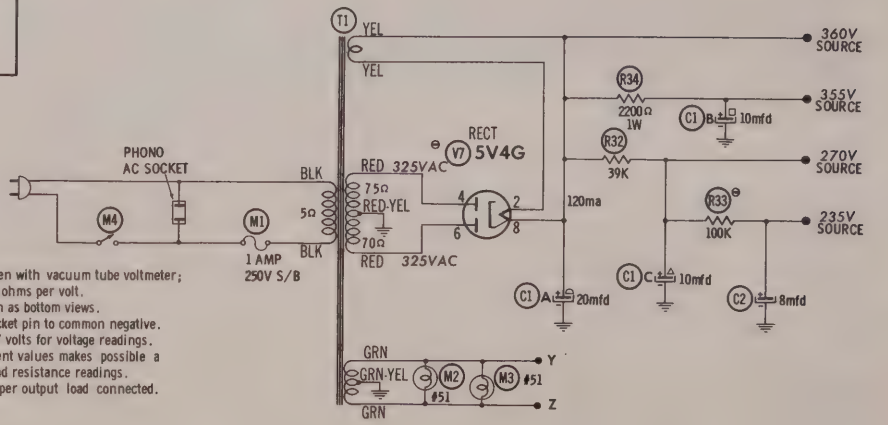
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

NEWCOMB
MODEL H-15

FOLDER 15



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6SF5	0Ω	0Ω	18meg	TP	†760K	TP	.1Ω	.1Ω
V2	6SF5	0Ω	0Ω	18meg	TP	†760K	TP	.1Ω	.1Ω
V3	6SJ7	0Ω	.1Ω	0Ω	10meg	0Ω	3.4meg	.1Ω	800K
V4	6SN7 GTB	560K	†310K	5600Ω	800K	†310K	5600Ω	.1Ω	.1Ω
V5	6L6GB	TP	.1Ω	†150Ω	†2200Ω	300K	TP	.1Ω	250Ω
V6	6L6GB	TP	.1Ω	†140Ω	†2200Ω	270K	TP	.1Ω	250Ω
V7	5V4G	0Ω	¶	NC	75Ω	NC	70Ω	NC	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V7.
TP TIE POINT
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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NEWCOMB MODEL H-15

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

OLYMPIC
MODEL 768

OLYMPIC
MODEL 768

OLYMPIC
MODEL 768

TRADE NAME	Olympic Model 768
MANUFACTURER	Olympic Radio & Tel. Corp., 34-01 38th Ave., Long Island City 1, N. Y.
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
RATING	8.3MA@9 Volts DC (No Signal, Min. Volume) 9MA@9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	540 - 1615KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2, A3..... GENERAL CEMENT # 8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537

A4, A5..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

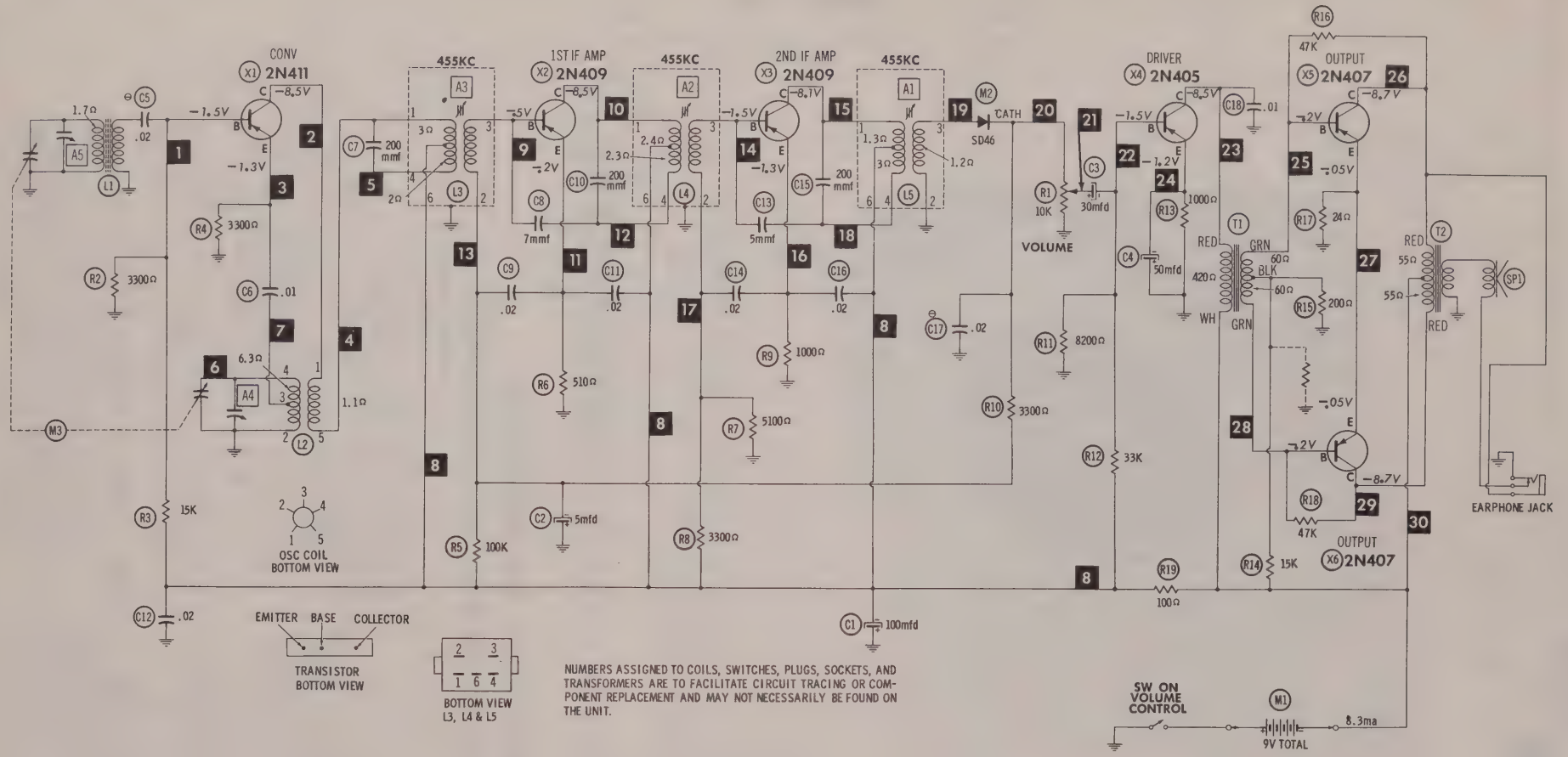
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1615KC	"	"	A4	"
3.		"	1400KC	1400KC	"	A5	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

J113

SET 449 FOLDER 16



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N411	3100Ω	3300Ω	↑100Ω
X2	2N409	5000Ω	510Ω	↑100Ω
X3	2N409	3300Ω	1000Ω	↑100Ω
X4	2N405	7500Ω	1000Ω	↑420Ω
X5	2N407	260Ω	24Ω	↑55Ω
X6	2N407	260Ω	24Ω	↑55Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS. MEASURED FROM CENTER TAP OF T2.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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OLYMPIC
MODEL 768

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N411	Converter		2N411	2N486	2N411	PNP
X2	2N409	1st IF Amplifier		2N409	2N483	2N409	PNP
X3	2N409	2nd IF Amplifier		2N409	2N482	2N409	PNP
X4	2N405	Driver		2N405	2N362	2N405	PNP
X5	2N407	Output		2N407	2N633	2N407	PNP Matched
X6	2N407	Output		2N407	2N633	2N407	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	100	10		PWE10100	NLW100-10	TT15X100	ML100-15	TE-1119.3	
C2	5	3		XPP-3005	NLW5-6	TT6X5	ML5-6	TE-1052.2	
C3	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	50	6		XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	.02	50			P285N-02	DDM-203	H-05S2	TA-120	5HK-S2	①
C6	.01	50			P285N-01	DDM-103	H-05S1	TA-110	5HK-S1	
C7	200				SI 200	D6-201	L10T2	UC-532	5GA-T2	
C8	7						L10V7	ZT-5568	5GA-V75	
C9	.02	50			P285N-02	DDM-203	H-05S2	TA-120	5HK-S2	
C10	200				SI 200	D6-201	L10T2	UC-532	5GA-T2	
C11	.02	50			P285N-02	DDM-203	H-05S2	TA-120	5HK-S2	
C12	.02	50			P288N-02	DDM-203	H-05S2	TA-120	5HK-S2	
C13	5				SI 5	D6-050	L10V5	ZT-555	5GA-V5	
C14	.02	50			P285N-02	DDM-203	H-05S2	TA-120	5HK-S2	
C15	200				SI 200	D6-201	L10T2	UC-532	5GA-T2	
C16	.02	50			P285N-02	DDM-203	H-05S2	TA-120	5HK-S2	
C17	.02	50			P285N-02	DDM-203	H-05S2	TA-120	5HK-S2	①
C18	.01	50			P285N-01	DDM-103	H-05S1	TA-110	5HK-S1	

① Some versions may use .01mfd in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	10K	1/4		B16-216				Volume & Switch

RESISTORS

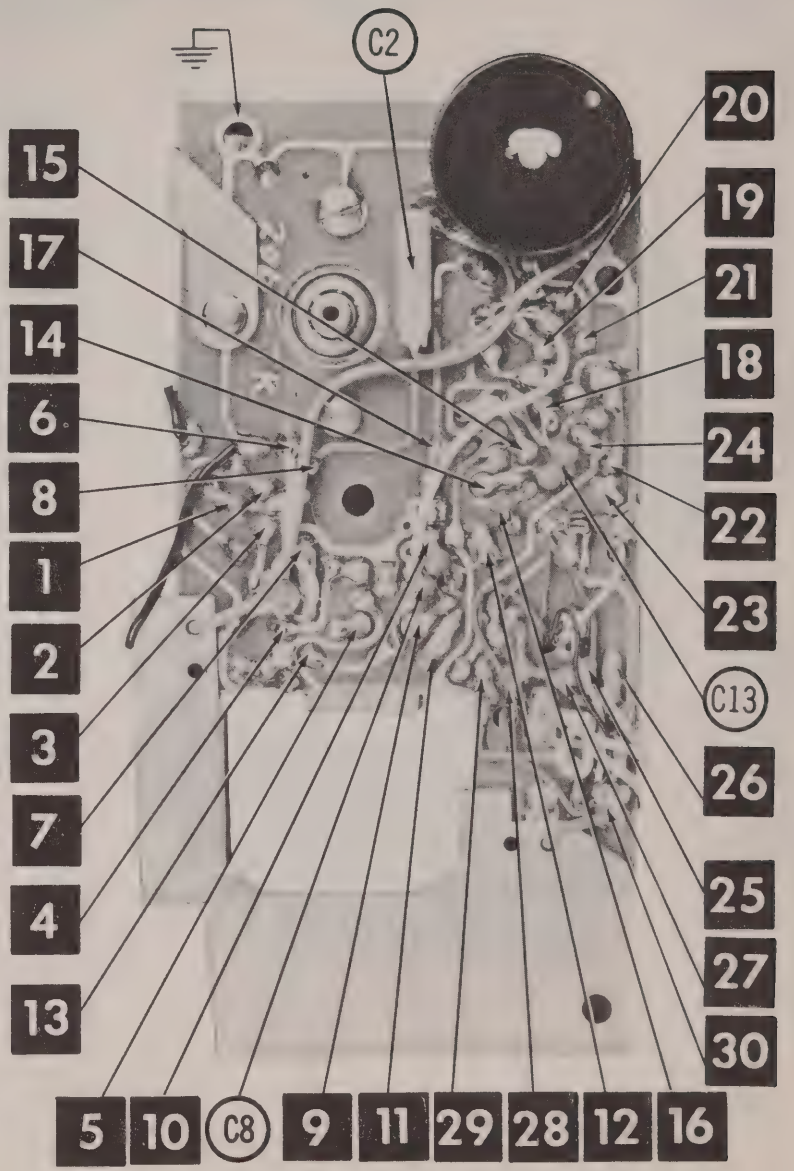
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R2	3300Ω			
R3	15K			
R4	3300Ω			
R5	100K			
R6	510Ω			
R7	5100Ω			
R8	3300Ω			
R9	1000Ω			
R10	3300Ω			

ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R11	8200Ω			
R12	33K			
R13	1000Ω			
R14	15K			
R15	200Ω			
R16	47K			
R17	24Ω			
R18	47K			
R19	100Ω			

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		OLYMPIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick							
L2	Osc. Coil							
L3	1st IF Trans.							
L4	2nd IF Trans.							
L5	3rd IF Trans.							

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	1							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	800Ω CT	8-10Ω	TRT-12							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	
SP1	2½"	PM	16Ω		25A07Z16	

BATTERIES

ITEM No.	VOLTAGE	OLYMPIC PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			P6		226		M1600	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		OLYMPIC PART No.	CBS PART No.	SYLVANIA PART No.	
M2	SD46		1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M3	Tuning Cap Printed Board	206-TR	2 Gang

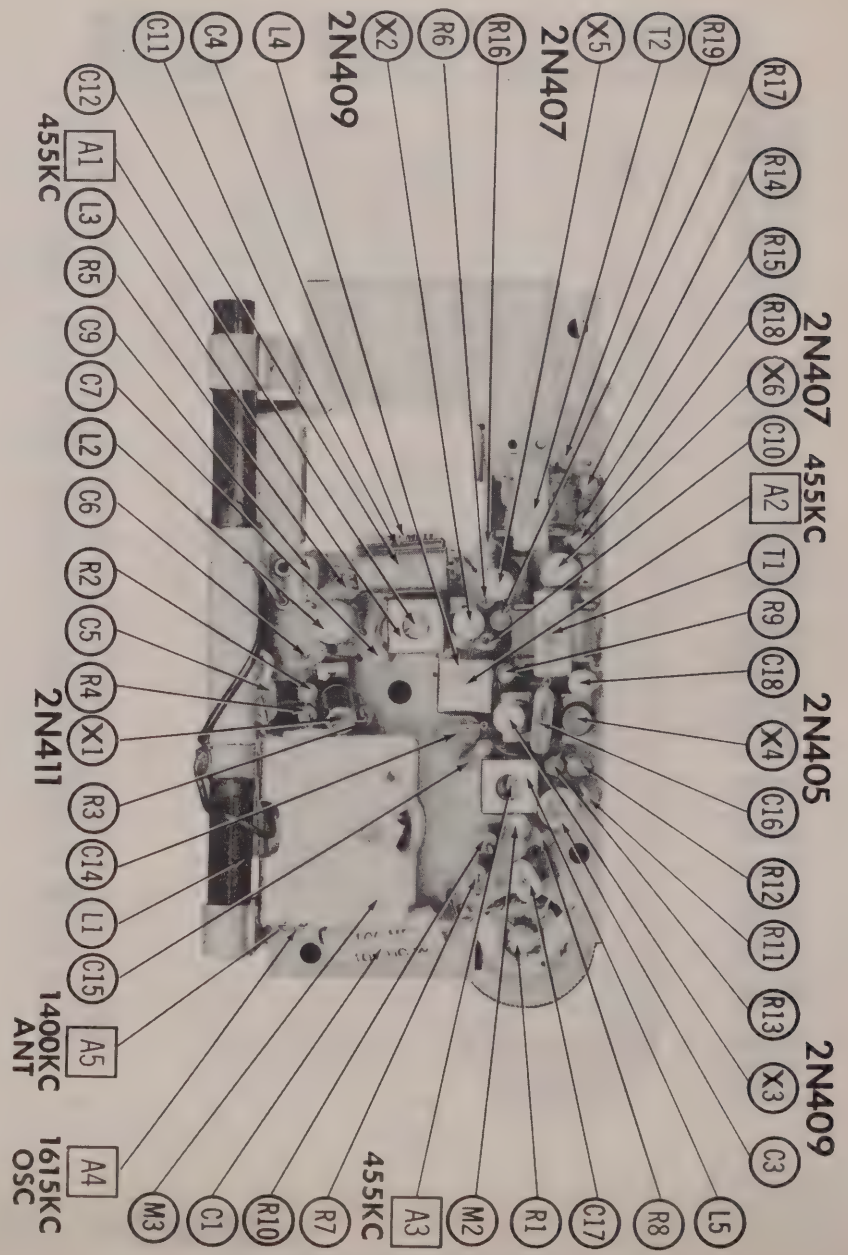
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



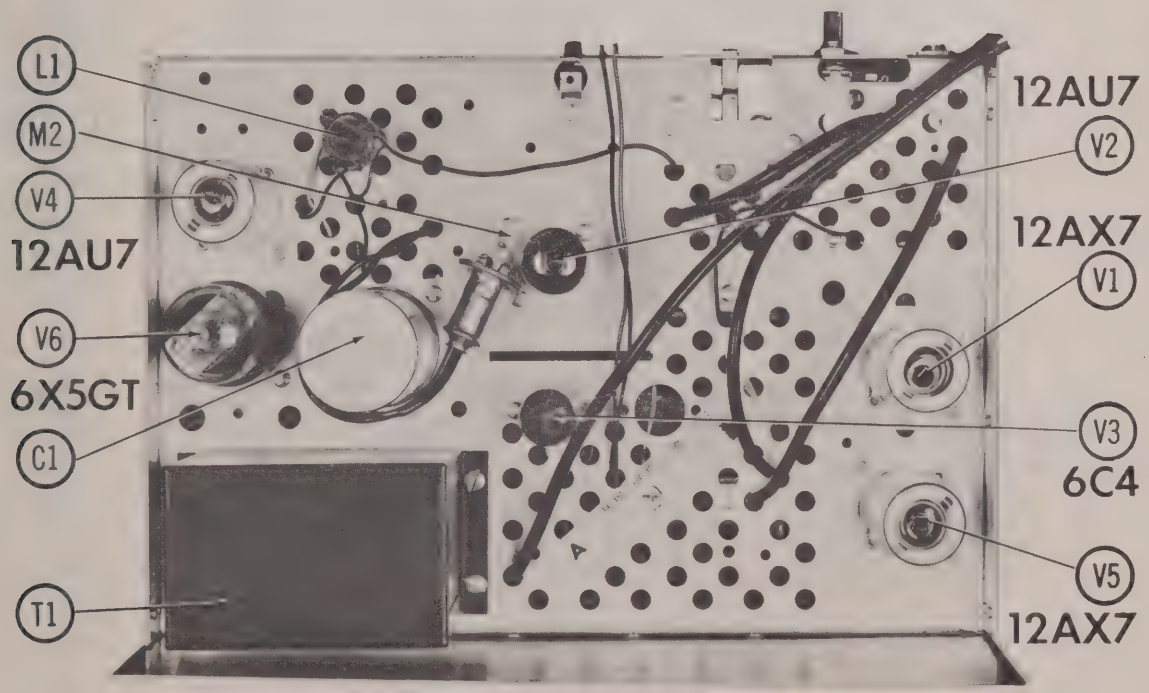
PHOTOFACT* Folder

PENTRON
MODEL CA-24

PENTRON
MODEL CA-24

TRADE NAME	Pentron Model CA-24
MANUFACTURER	Pentron Corp., 777 S. Tripp Ave., Chicago 24, Illinois
TYPE SET	AC Operated 6 Tube Play-Record Amplifier
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 32 Watts, .32 Amp. @117 Volts AC (Play) 30 Watts, .30 Amp. @117 Volts AC (Record)

PENTRON
MODEL CA-24



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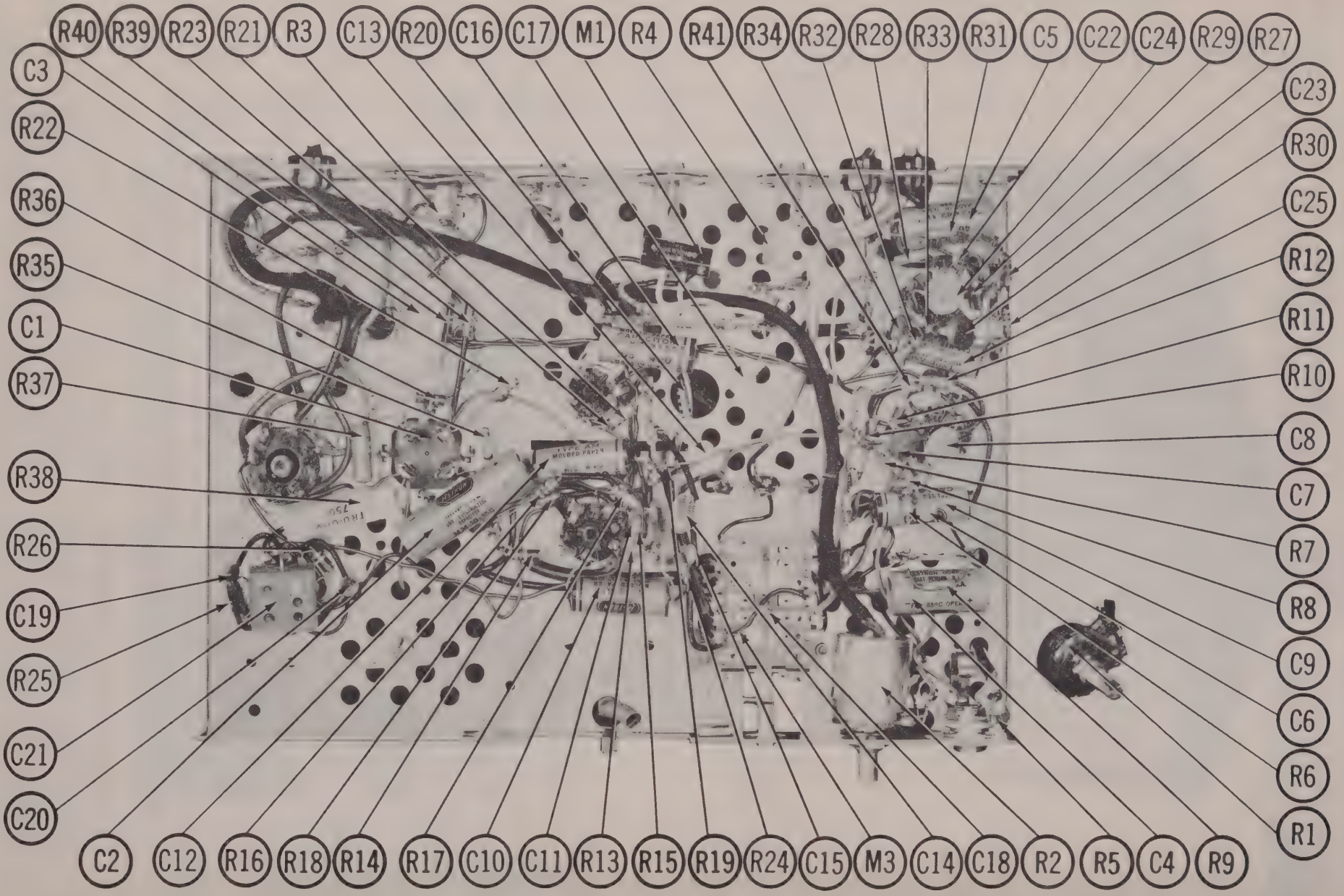
J107

SET 449 FOLDER 17



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AX7	
V2	AF Amplifier	12AU7A	
V3	Meter Amplifier	6C4	
V4	Bias Oscillator	12AU7A	
V5	AF Amplifier	12AX7	
V6	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	PENTRON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▰40	450	285-90694	AFH4-18-10	D0171	FP446	TMQ-18	TVL-4771, 8	
B	■30	450							
C	▲10	350							
D	10	350							
C2	10	150		PRS150V10	BBR10-150	TC42	TD-10-150	TVA-1406	
C3	25	25	273-25614	PRS25V25	BBR25-25	TC26	TD-25-25	TVA-1205	
C4	25	25	273-25614	PRS25V25	BBR25-25	TC26	TD-25-25	TVA-1205	
C5	25	25	273-25614	PRS25V25	BBR25-25	TC26	TD-25-25	TVA-1205	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	PENTRON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	500				BPD-0005	DD-501	BYA10T5	B-350	5GA-T5	
C7	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C8	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C9	.05	400			P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C10	.05	400			P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C11	100				BPD-0001	DD-101	L10T1	CNO-310	5GA-T1	
C12	.05	400			P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C13	50				BPD-00005	DD-50	L10Q5	CNO-447	5GA-Q5	
C14	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C15	100				BPD-0001	DD-101	L10T1	B-310	5GA-T1	
C16	.05	400			P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C17	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C18	250		10%		DI-250	D6-251	L10T25		5GA-T25S 10%*	
C19	500				BPD-0005	DD-501	BYA10T5	B-350	5GA-T5	
C20	500				BPD-0005	DD-501	BYA10T5	B-350	5GA-T5	
C21	5000		10%		DI-5000	DD-502	BYA10D5	JL-250	5GA-D5S 10%*	
C22	500				BPD-0005	DD-501	BYA10T5	B-350	5GA-T5	
C23	3000				BPD-0033	DD-302	BYA10D3	B-233	5GA-D3	
C24	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C25	.05	400			P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PENTRON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	124A50413-7	B-60	A47-500K-Z	Q13-133	U48	Gain, Left Speaker
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	500K	½	126A50413-4	B-60	A47-500K-Z	Q13-133	U48	Gain, Right Speaker
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	
R3	126Ω	2(ww)						Hum Adjust

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PENTRON PART No.	NOTES
	OHMS	WATT		
R4	220K			
R5	2700Ω			
R6	1meg			
R7	220K			
R8	470K 5%			
R9	2700Ω			
R10	150K			
R11	100K			
R12	1500Ω			
R13	68K			
R14	3300Ω			
R15	330K			
R16	470K			
R17	68K			
R18	3300Ω			
R19	220K			
R20	33K			
R21	470K			
R22	47K			
R23	3300Ω			
R24	270K			
R25	100K			
R26	100K			
R27	1meg			
R28	220K			
R29	150K			
R30	470K 5%			
R31	2700Ω			
R32	1meg			
R33	100K			
R34	1500Ω			
R35	68K			
R36	10K			
R37	22K	1		
R38	750Ω	5		
R39	270K			
R40	22K			
R41	1meg			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		PENTRON PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Bias Osc.							

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	PENTRON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .32A	530 VCT @ .030A	6.3 VCT @ 2.25A	352-17	25R02①				25R02①	

① Drill new mounting holes.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	PENTRON PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1				60-8694①	026-1B1-Q①		① Selenium

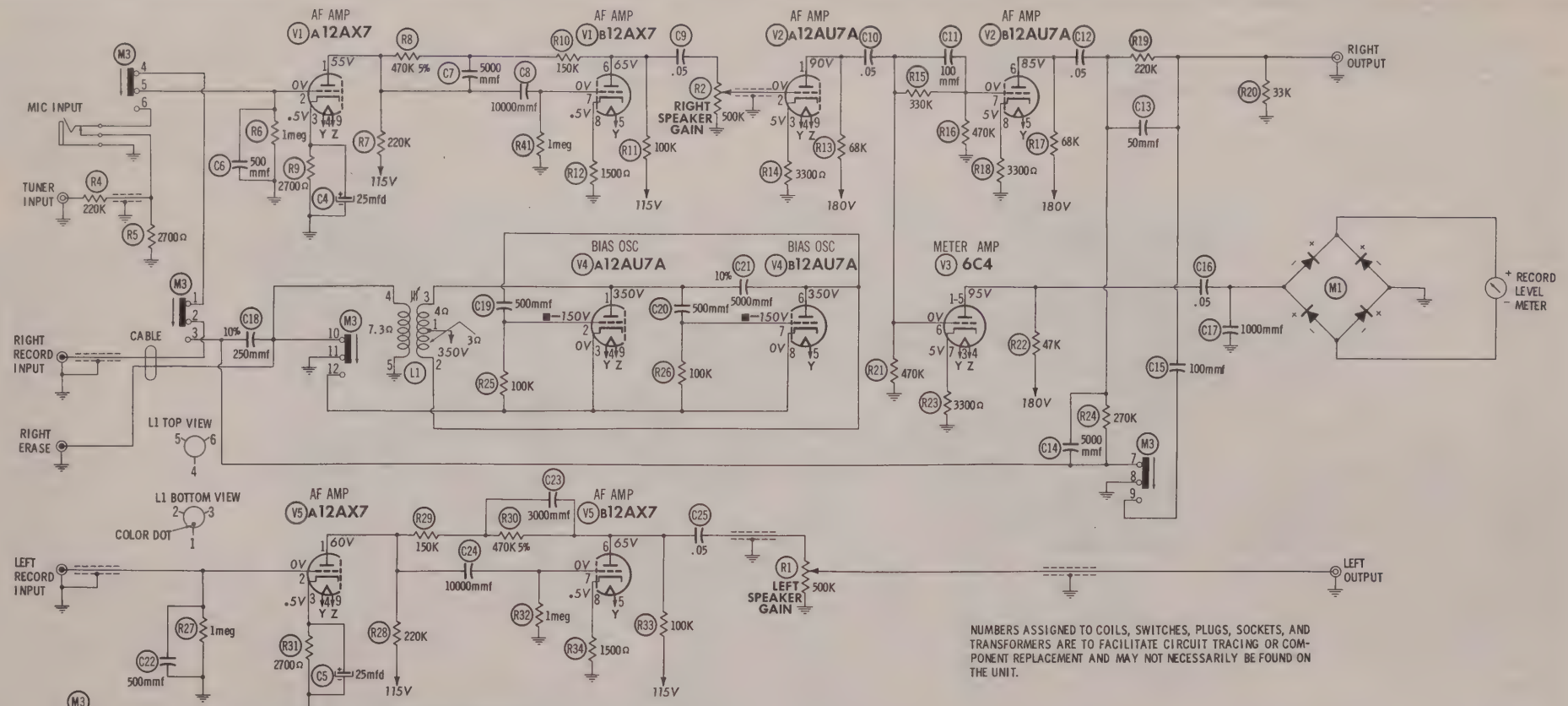
MISCELLANEOUS

ITEM No.	PART NAME	PENTRON PART No.	NOTES
M2	Lamp		#1847
M3	Switch		Record-Release (Slide Type, Spring Return)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†250K	1meg ■ 2700Ω	2700Ω	22K	22K	†150K	1meg	1500Ω	22K
V2	12AU7A	†100K	0Ω	3300Ω	22K	22K	†100K	320K	3300Ω	22K
V3	6C4	†80K	NC	22K	22K	80K	320K	3300Ω		
V4	12AU7A	†750Ω	INF ■ 100K	INF ■ 0Ω	22K	22K	†750Ω	INF ■ 100K	INF ■ 0Ω	22K
V5	12AX7	†250K	1meg	2700Ω	22K	22K	†150K	1meg	1500Ω	22K
V6	6X5GT	NC	22K	380Ω	TP	440Ω	NC	22K	¶	

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V6.
■ MEASURED IN "RECORD" POSITION
TP TIE POINT
NC NO CONNECTION

RECORD-PLAY SW (M3) SHOWN IN "PLAY" POSITION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

SW ON RIGHT SPEAKER GAIN CONTROL

RECT V6 6X5GT

350V SOURCE
180V SOURCE
115V SOURCE

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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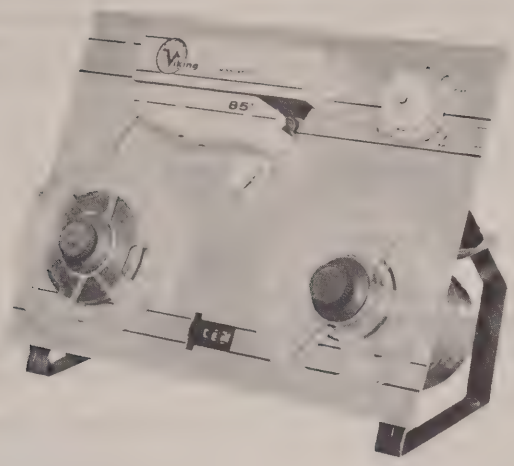
PENTRON MODEL CA-24

PHOTOFACT* Folder

*TRADE MARK



VIKING MODEL
85 Series (Ch. RP-61B)

GENERAL INFORMATION

Viking 85 Series tape transports consist of the following types:

85Q — quarter-track and dual-track stereophonic, and single-channel playback.

85R — half-track erase, record, and playback.

85RQ — quarter-track and half-track stereo; and half-track erase, record, and playback.

85ES — half-track stereo erase, record, and playback; independent erase or record of either channel.

85SQ — quarter-track playback and half-track stereophonic erase, record, and playback; independent erase or record on either channel; quarter-track playback and sound on sound.

The Viking 85 Series has a four-pole induction, capstan drive motor and a four-pole, variable-torque, take-up reel drive motor.

These recorders have two speeds, 7 1/2 and 3 3/4 ips. When both tracks are used for monaural, recording times are as follows:

Reel Size	3 3/4 ips	7 1/2 ips
5" (600 ft.)	1 hour	1/2 hour
7" (1,200 ft.)	2 hours	1 hour

The Viking 85 Series operates on 60 cycles, 105-125 volts AC only.

Manufactured by:
Viking of Minneapolis
9600 Aldrich South
Minneapolis 20, Minnesota

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C395

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PREPARING FOR OPERATION

1. Plug AC cord into a receptacle of the proper rating.
2. Turn unit on.
3. With motor running, set speed of recorder to 7 1/2 or 3 3/4 ips, depending upon speed at which tape was, or is to be, recorded.
4. Be certain that function controls are in the neutral position.
5. Set Head Shift control to half-track or quarter-track (corresponding to type of recording to be made or played).

FUNCTION OF TAPE DECK CONTROLS

On-Off

A pin in the center of the Bar knob actuates the AC switch. Pushing this pin in turns the AC power on; pulling this pin out turns the AC power off.

Bar Knob

1. Turning this knob counterclockwise puts the unit in the cuing position. The brakes on the supply and take-up reels are released, and the pressure pads place the tape against the heads. The reels can now be turned backward or forward for cuing or editing.
2. When the knob is straight up or down, the tape deck is in the neutral position. In this position, the brake tension is on both reels.
3. For recording and playback, turn the knob clockwise. In this position, both motors are turned on and the take-up reel brake is released, but a slight tension remains on the supply reel.

Concentric Ring

1. For rewind, turn knob counterclockwise. This moves the supply reel to the right so it will engage the motor rewind drive ring.
2. Center position is neutral.
3. For Fast Forward, turn ring clockwise. In this position, the fast forward drive motor is switched on, and a slight tension is maintained on the brake at the supply reel.

Speed Change

Selects the desired tape speed. Do not change this control unless the motor is running.

Head Shift

The H position is for dual-track tapes. The Q position is for quarter-track tapes.

NOTE: When this control is in the Q position, the alignment of all heads is affected vertically.

FUNCTION OF AMPLIFIER CONTROLS

Off-On-Playback Level

Turns the power to the amplifier on or off, and regulates the playback volume.

Play-Record

Selects the Record or Playback mode of operation.

NOTE: To prevent accidental erasure, rotate this control to the Play position after a recording has been made.

Equalization

Equalizes the high and low note content.

Record Level

Controls the loudness of a recording to be made and thus prevents saturation or overloading of the tape.

OPERATING INSTRUCTIONS

Threading Tape

1. Place a reel of tape, up to seven inches in diameter, on supply reel (62). Place an empty reel of the same size on take-up reel (15).
2. Place controls in neutral position.
3. Unwind fourteen inches of tape from supply reel (62). Insert tape into slot of tape heads. Secure other end of tape to the empty reel on take-up reel (15).

To Record from Microphone

1. Turn on AC power on tape deck and amplifier.
2. Thread tape (see "Threading Tape").

3. Plug microphone into low-level input jack on back of amplifier.

4. Turn Play-Record control to Record position.

5. Adjust recording level so the eye indicator barely closes during recording peaks.

6. To start the tape, turn Bar knob to F.

To Record from a Phonograph or Tuner

1. Turn on AC power on tape deck and amplifier.

2. Thread tape (see "Threading Tape").

3. Plug phonograph or tuner into the high-level input jack on the back of the amplifier.

4. Turn Play-Record control to Record position.

5. Adjust recording level so the eye indicator barely closes on recording peaks.

To Record from a Radio or Television Receiver

Place the microphone approximately six to twelve inches in front of the receiver speaker. Turn the receiver volume control to a normal level. Turn the receiver tone control to maximum treble. Set the recording level and proceed with the recording (see "To Record from a Microphone").

To Play a Recording

1. Thread tape (see "Threading Tape").

2. Turn Play-Record control to Play position.

3. Turn Bar knob clockwise for Playback position.

4. Adjust Playback Level control for desired listening level.

To Edit and Splice Tape

NOTE: Since one track cannot be edited and spliced without the other track being affected, recordings to be edited should be limited to one track only.

1. Tape may be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements, etc., may be inserted between selections. Unused sections of tape can be spliced for re-use.

2. For best results, cut tape at a slight diagonal, join ends with splicing tape on the glossy side, and trim any excess width.

ADJUSTMENTS

Pressure Pads

Pad extension springs (52) should be adjusted for a slight tension when the pads are against the heads. To adjust the tension on the pressure pads, slightly bend pad extension springs (52).

Rewind Drive

1. Adjust rewind drive adjust nut (64) on control rod (21) until the rewind drive ring on motor pulley (88) engages the hub of supply reel (62) when the Fast Forward-Rewind knob is turned to the Rewind position.

2. Tighten take-up motor switch actuating slug (65) against rewind drive adjust nut (64) after the tension has been set. One of the flattened surfaces must be parallel to the motor switch cam.

3. The motor switch may be relocated, by loosening the two mounting screws, so that it is actuated when the control is in the Fast Forward position.

Supply Reel Brake

Supply reel has a separate adjustment. The adjustment screw is on the right when the tape deck is viewed from the rear.

To increase brake tension, turn supply reel brake adjusting screw (68) counterclockwise. To decrease brake tension, turn screw (68) clockwise.

NOTE: When the Bar knob is in the Cue or Forward position, a pull of 2 1/2 ounces is necessary at the circumference of the supply reel hub for it to turn slowly.

Brakes (For Supply and Take-up Reels)

1. Set operating controls in neutral position.

2. Adjust brake adjusting screw (19) so that 1/16 inch of the compensator cam bracket is visible through the hole in the main deck assembly.

3. To decrease brake tension, turn brake adjusting screw (19) clockwise. To increase brake tension, turn brake adjusting screw (19) counterclockwise.

4. If further adjustment is needed, set the Bar knob in the forward position. Loosen the brake cord end clip (58) nearest the take-up reel drive motor. Adjust the length of brake cord until it no longer slows the take-up reel drive motor.

NOTE: Do not place any tape on the take-up reel for this adjustment.

Head Alignment

1. Place a piece of transparent tape across the heads and in the tape guides.

2. Observe the position of the pole pieces. If adjustment is necessary, adjust all three screws at each head for the correct position across the width of the tape.

3. On the half-track erase heads, the pole pieces should extend far enough beyond the edge of the tape to be visible.

4. On half-track record-playback heads, the pole pieces should be approximately 0.01 inch from the edge of the tape.

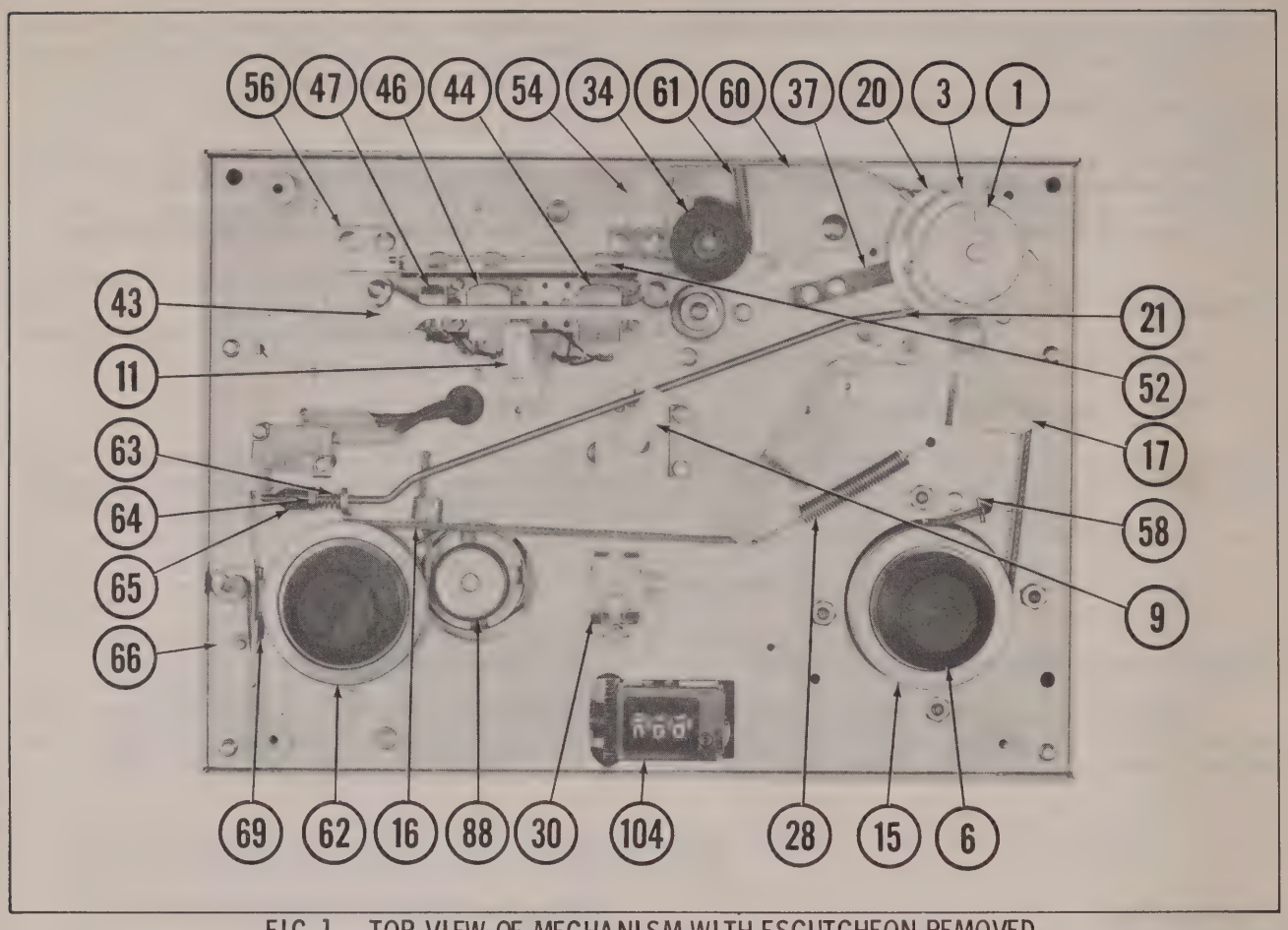


FIG 1. TOP VIEW OF MECHANISM WITH ESCUTCHEON REMOVED

5. On dual-track (stereo) record-playback and erase heads, the pole pieces should be centered across the width of the tape.

6. Quarter-track heads should be centered across the width of the tape when the Head Shift control is in the H position. They should be even with the edge of the tape when the Head Shift control is in the Q position.

To adjust the azimuth correctly, proceed as follows:

1. Connect a standard phono patch cord between the head and the input of a low-level playback preamplifier.

2. Connect a ground wire between the preamplifier chassis and the tape transport.

3. Connect an AC meter or scope across the amplifier output; also connect a speaker or phones.

4. Thread a constant-tone alignment tape or a commercially recorded music tape on the unit.

5. Turn the Bar knob and the Play-Record control to the Play position.

6. Adjust screw (46A) for maximum output as indicated on the AC meter or scope.

7. Align the remaining heads as outlined in the foregoing steps.

NOTE: For a more precise azimuth adjustment of the quarter-track head, turn the Head Shift control to the Q position. Then thread a full-track or quarter-track tape on the unit and adjust screw (46A) for maximum output.

LUBRICATION

The capstan contains oilite bearings. Therefore, it requires no further lubrication.

After 1,000 hours of operation, oil the sleeve bearings on the drive motor and take-up motor with one drop of light machine oil. Do not allow any oil to fall on the belt.

The sliding members on the tape deck assembly occasionally may require lubrication. Use "Lubriplate" or a similar lubricant for these parts. Do not let any lubricant fall on the drive belt or on any part that might contact the tape.

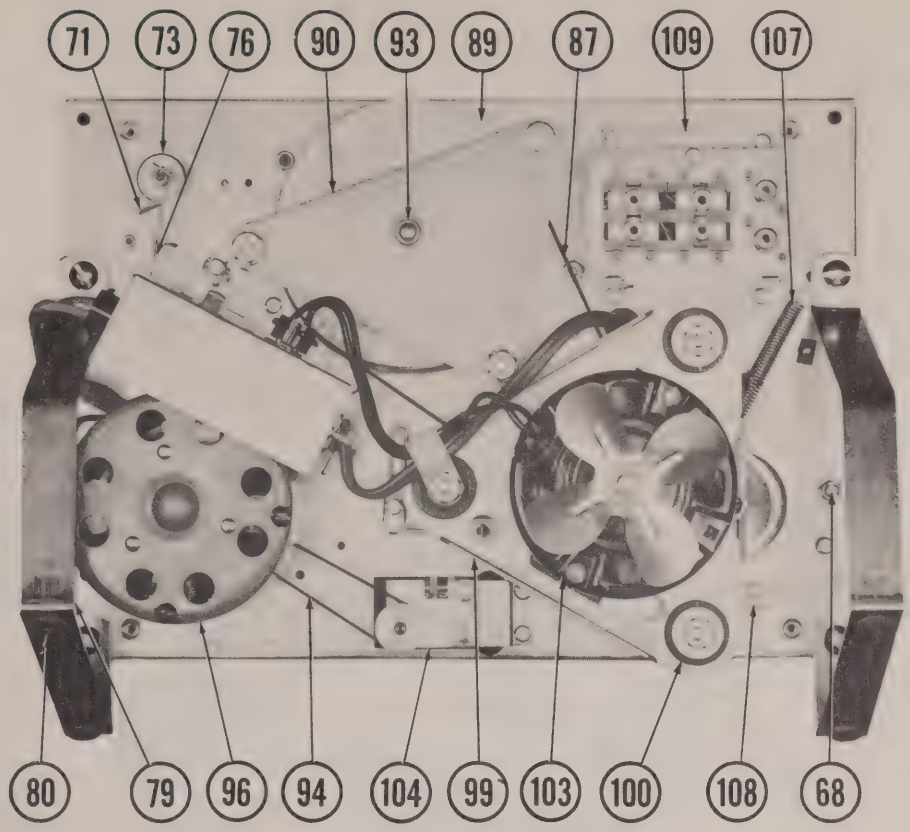


FIG 2. BOTTOM VIEW OF MECHANISM

CLEANING

In-line quarter-track head(44), in-line half-track record-playback head (46), flywheel (89), and pressure roller (34) may accumulate tape coating residue, which is worn off the tape as it passes these parts. Clean these parts with a soft cloth and alcohol.

TROUBLE CHART

Symptom	Cause	Remedy
Drive motor does not run.	1. Faulty connection to tape deck.	1. Check all AC connections.
Speed Change control does not operate in 3 3/4-ips position.	1. Motor pulley (88) too far from motor housing.	1. Move motor pulley (88) closer to motor housing.
Speed Change control does not operate in 7 1/2-ips position.	1. Motor pulley (88) too close to motor housing.	1. Move motor pulley (88) away from motor housing.
Wow.	1. Pressure pad tension too great.	1. See "Pressure Pad" under "Adjustments."
	2. Brakes too tight.	2. See "Brakes" under "Adjustments."
Flutter.	1. Dirty heads.	1. Clean heads (see "Cleaning").
	2. Outer bearing plate (90) binds.	2. Reposition outer bearing plate (90).

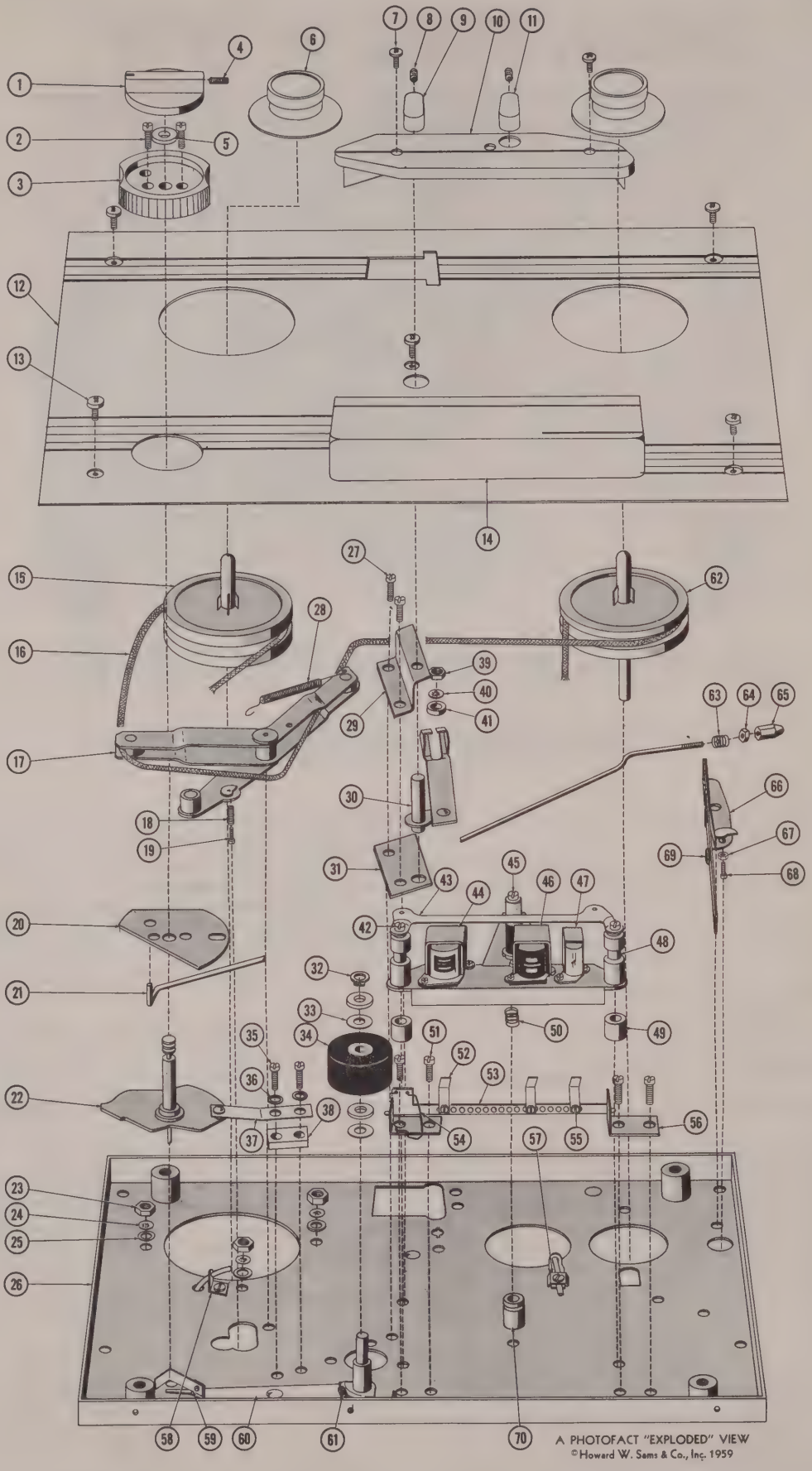


FIG 3A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE

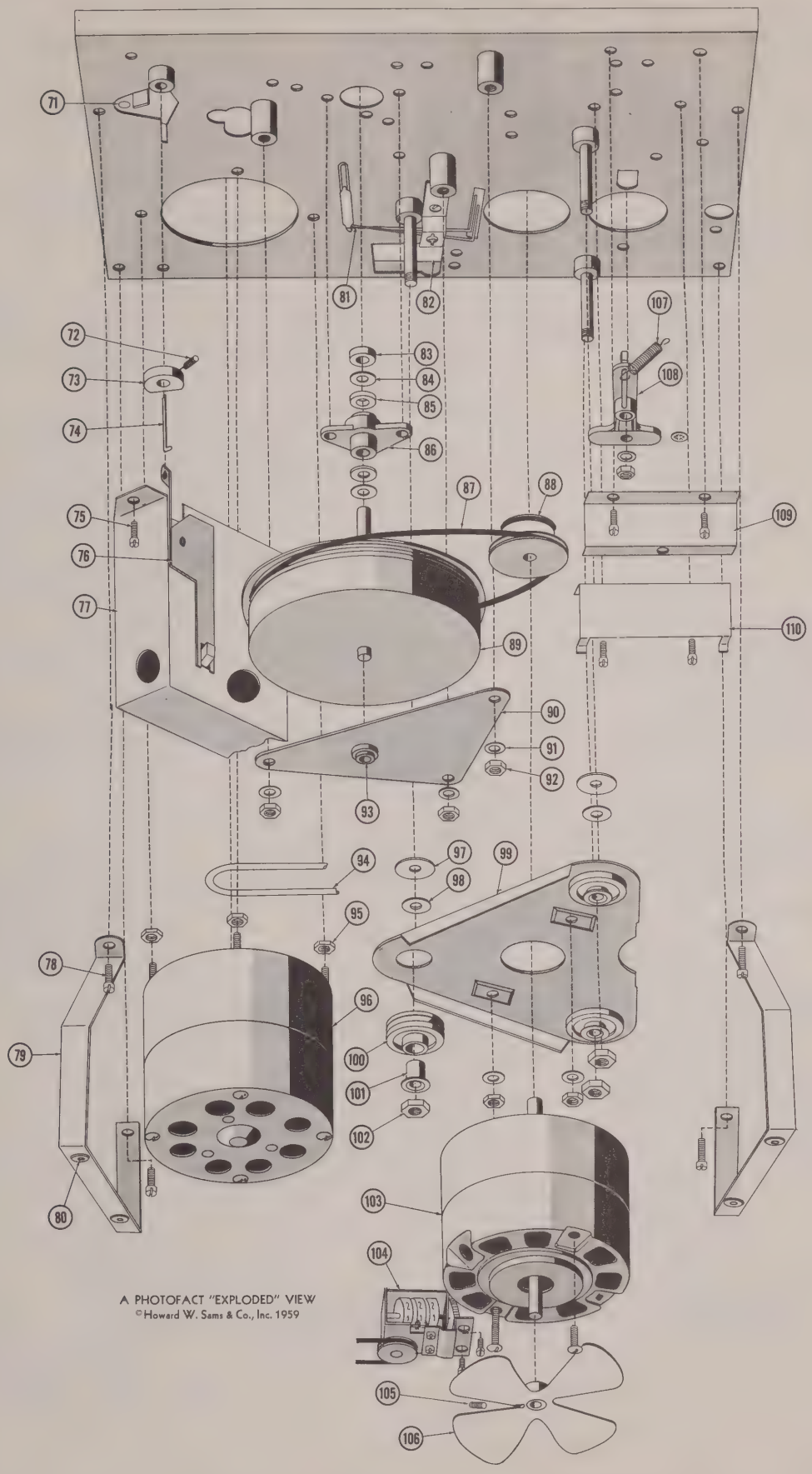


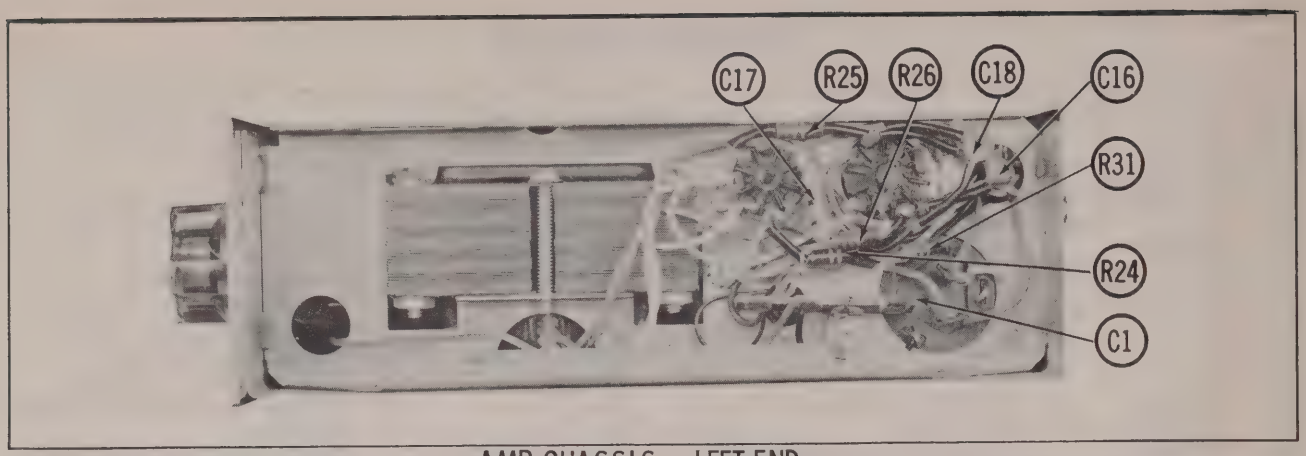
FIG 3B. EXPLODED VIEW OF PARTS BELOW BASEPLATE

TROUBLE CHART (CON'T.)

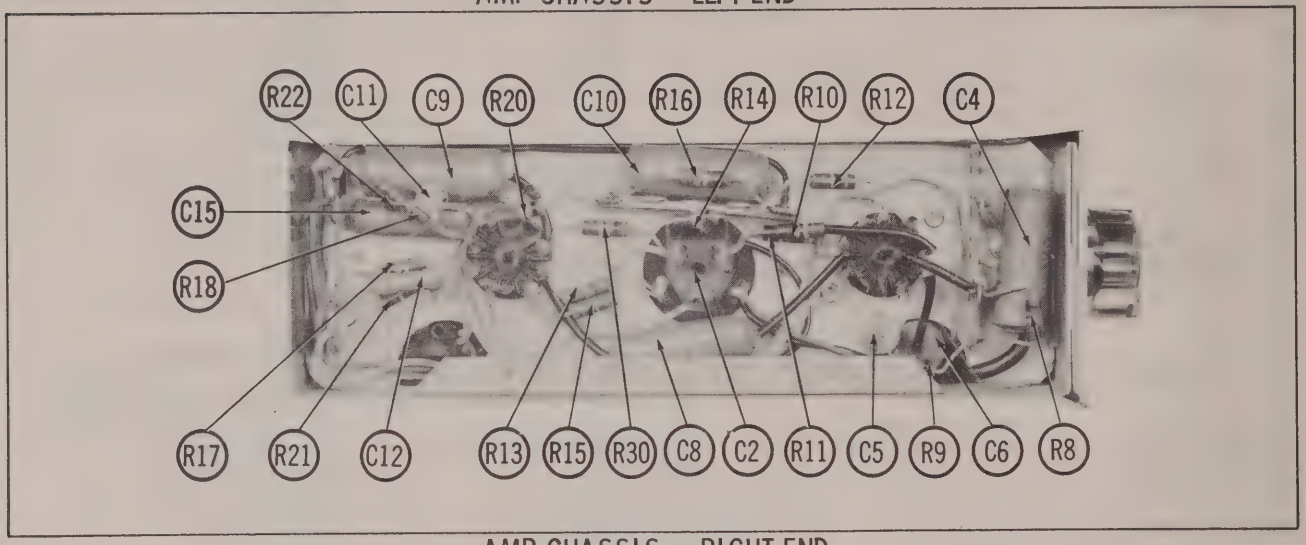
Symptom	Cause	Remedy
	3. Pressure pad tension too great.	3. See "Pressure Pad" under "Adjustments."
	4. Brakes too tight.	4. See "Brakes" under "Adjustments."
Does not record, playback, or erase.	1. Improper head connections.	1. Check head connections with schematic.
	2. Defective heads.	2. Replace heads
Poor high-frequency response.	1. Dirty record - playback head.	1. Clean heads (see "Cleaning").
	2. Head out of alignment.	2. Align heads (see "Head Alignment").
Hum.	1. Tape deck not grounded to amplifier.	1. Connect a ground wire between the tape deck and the amplifier.
	2. Not enough spacing between tape deck and amplifier.	2. Adjust spacing so that AC hum is not picked up.
Too much slack in tape while going from Forward, Fast Forward, or Rewind to Stop.	1. Brakes need adjustment.	1. See "Brakes" under "Adjustment."
Does not rewind tape properly.	1. Rewind drive adjust nut (64) on control rod (21) needs adjustment.	1. See "Rewind Drive" under "Adjustments."
Take-up motor (96) does not run, or runs all the time, when the Bar knob is in the Forward position.	1. Play switch cam (73), which actuates the Play switch, needs adjustment.	1. Loosen set screw (72). Position play switch cam (73) so that play switch actuator (71) is against the flattened portion of play switch cam (73) in the neutral position.
Take-up motor (96) does not run in the Fast Forward position.	1. Switch directly above supply reel hub needs adjustment.	1. See "Rewind Drive" under "Adjustments."
Fast Forward-Rewind knob does not index properly.	1. Too much play in shaft.	1. Loosen set screw (4) and tighten knob assembly.
Capstan binds.	1. Outer bearing plate (90) bent or improperly installed.	1. If outer bearing plate (90) is bent, remove and straighten. After replacing bearing plate, tighten the three retaining nuts while the motor is running.
Capstan does not rotate.	1. Drive belt (87) broken.	1. Replace drive belt (87). Make sure the belt passes between the fingers of the speed change control assembly.

Ref. No.	Part No.	Description
1	D606A	Play-Cue Knob
2		Screw (2)
3	D607	Fast Forward-Rewind Knob
4		Set Screw
5	D357	Felt Washer
6		Tape Reel Keeper (2)
7		Head Cover Screw
8		Set Screw
9	D609A	Belt Shifter Knob
10	D605B	Head Cover
11	D625	Quarter Track Shifter Knob
12	D603A	Front Panel
13		Screw (5)
14	D604A	Pressure Pad Cover
15	D623	Takeup Reel Hub Assy.
16	D622	Brake Cord-29"
17		Brake Actuating Lever
18		Tension Spring
19		Brake Adjusting Screw
20	D613A	Forward Reverse Cam
21	D621	Control Rod
22	D614A	Main Cam Assy. (Play-Cue)
23		Hex Nut
24		Lockwasher
25		Washer
26	D602XA	Main Chassis Assy.
27		Screw (2)
28	D618	Brake Spring
29	D639	Bearing Bracket
30	D637A	Pivot Shaft
31	D640	Tip Bearing
32	5555-25	Grip Ring
33		Washer
34	D312	Pressure Roller
35		Screw (2)
36		Washer
37	D658	Cam Lock Spring Assy.
38	D659	Cam Lock Spacer
39		Hex Nut
40		Lockwasher
41		Flat Washer
42		Screw
43	D620	Head Cover Bracket
44		In-Line Quarter Track Head
45	D626	Quarter Track Shifter
46		In-Line Half Track Record-Playback Head
46A		Azimuth Adjustment Screw
47		In-Line Half Track Erase. Head
48	D624	Tape Guide (2)
49	D633	Head Assy. Spacer (2)
50		Spring
51		Screw (4)
52	D629	Pad Extension Spring
53	D628	Pivot Bar
54	D630	Pivot Bar Spring
55		Screw
56	D627	Pivot Bar Support (2)

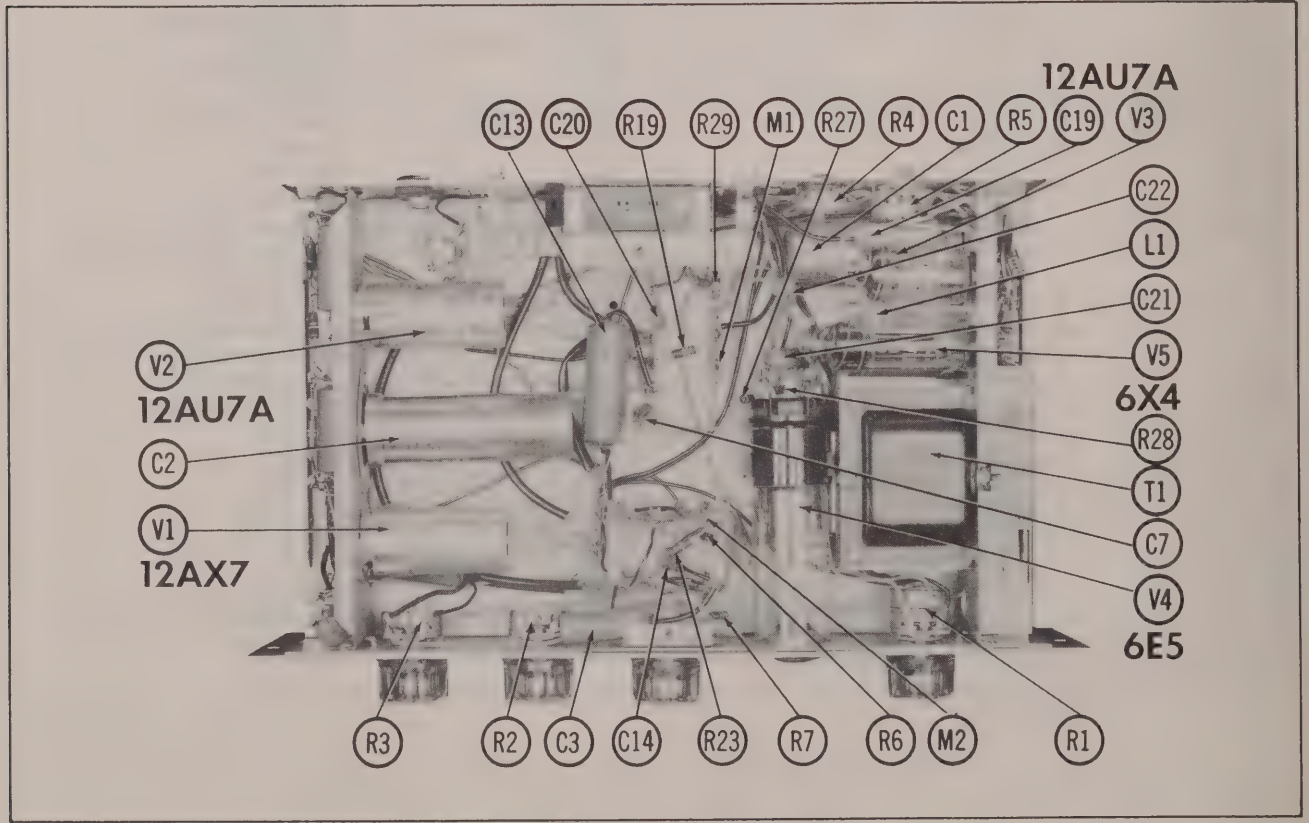
Ref. No.	Part No.	Description
57	D656	Brake Cord End Brkt. (2)
58	D657	Brake Cord End Clip (2)
59	D611	Lock Spring
60	D610	Pressure Arm Assy.
61	D617	Pressure Release Spring
62	D333XB	Supply Reel Assy.
63	D35	Control Rod Spring
64		Rewind Drive Adjust Nut
65		Takeup Motor Switch Actuating Slug
66	D318BA	Supply Reel Brake & Bracket Assy.
67		Hex Nut
68		Supply Reel Brake Adjusting Screw
69		Brake Pad
70	D634	Grooved Spacer
71		Play Switch Actuator
72		Set Screw
73	D615	Play Switch Cam
74		On-Off Switch Link
75		Screw
76	Part of Ref. No. 77	On-Off Switch Actuating Lever
77	D668A	Junction Box Assy.
78		Screw
79	D379A	Stand Up Mounting Brkts.
80		Grommet
81	D635	Transfer Arm
82		Transfer Arm Bracket
83		Keeper
84		Felt Washer
85		Bearing
86		Capstan Housing
87	D359	Drive Belt
88		Motor Pulley
89		Flywheel
90	D325	Outer Bearing Plate Assy.
91		Washer
92		Hex Nut
93		Bearing
94	D653	Counter Belt
95		Hex Nut
96	D362H	Takeup Motor
97	D322A	Flat Washer
98		Flat Washer
99		Motor Mounting Plate
100		Shock Mount
101		Motor Spacer (3)
102		Hex Nut
103	D362DA	Motor Assy.
104	D652	Counter
105		Set Screw
106		Motor Fan
107		Spring
108		Part of item 62
109	D643	Jack Support
110	D642	Jack Hinge



AMP CHASSIS – LEFT END



AMP CHASSIS – RIGHT END



AMP CHASSIS – BOTTOM VIEW

AMP PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AX7	12AD7 *
V2	AF Amplifier	12AU7A	
V3	Bias Osc.	12AU7A	12AV7 *

ITEM No.	USE	TYPE	NOTES
V4	Tuning Indicator	6E5	
V5	Rectifier	6X4	

* Alternate.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	VIKING PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■15	475		AFH2-64-50	B0485	FP258	TMD-48	TVL-2820	
B	▲15	475							
C2A	■30	250		AFH3-89	C0670	FP331	TM-3020	TVL-3515	
B	▲30	250							
C	20	250							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	VIKING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C4	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C5	50				BPD-00005	DD-500	L10Q5	UC-545	5GA-Q5	
C6	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C7	100				BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C8	.022	200			P288N-022		CUB2S22	GEM-4122	2TM-S22	
C9	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C10	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C11	25				BPD-000025	DD-250	L10Q25	UC-5425	5GA-Q25	
C12	500		10%			DI-501	PM6T5	MCB245	MS-35	①
C13	.47	200			P288N-47		CUB2P47	GEM-2047	2TM-P47	
C14	100				BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C15	.01	400			P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C16	500		10%			DI-501	PM6T5	MCB245	MS-35	
C17	500		10%			DI-501	PM6T5	MCB245	MS-35	
C18	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C19	.022	400			P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C20	750				DI-750	DD-751	L10T75	JL-375	5GA-T75	
C21	.01	400			P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C22	50				BPD-00005	DD-500	L10Q5	UC-545	5GA-Q5	

① Some versions may use 450mmf 10% in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	VIKING PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	250K	½	DL3544	B-51	A47-250K-Z	Q13-130	U44	Playback Level
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power On-Off
R2A	5000Ω	½	RP15C	B-10	A47-5000-S	Q11-114	U14	Playback Equalizer
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	250K	½	RP15D	B-50	A47-250K-S	Q11-130	U46	Record Level
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4	250Ω	1 (WW)	CN18172				FL250P	Hum Balance
R5A	100K	½	RP15F	B-40	A47-100K-S	Q11-128	SU-41	Osc. Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		VIKING PART No.	NOTES
	OHMS	WATT		
R6	120K			Note 1
R7	47K			
R8	10meg			
R9	1000Ω			
R10	220K			
R11	220K			
R12	5600Ω			
R13	2.2meg			
R14	100K			
R15	2200Ω			
R16	220K			
R17	100K			
R18	2.2meg			

ITEM No.	RATING		VIKING PART No.	NOTES
	OHMS	WATT		
R19	120K			
R20	100K			
R21	51K 5%			
R22	2200Ω			
R23	2200Ω			
R24	22K			
R25	22K			
R26	1800Ω			
R27	4.7meg			
R28	1meg			
R29	10K			
R30	100K			
R31	33K			

Note 1. Some versions may use 56K or 68K in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		VIKING PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Bias Osc.	D501						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	VIKING PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .22A	510VCT @ .010A	6.3V @ .9A	M845						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1A									

CRYSTAL DIODES

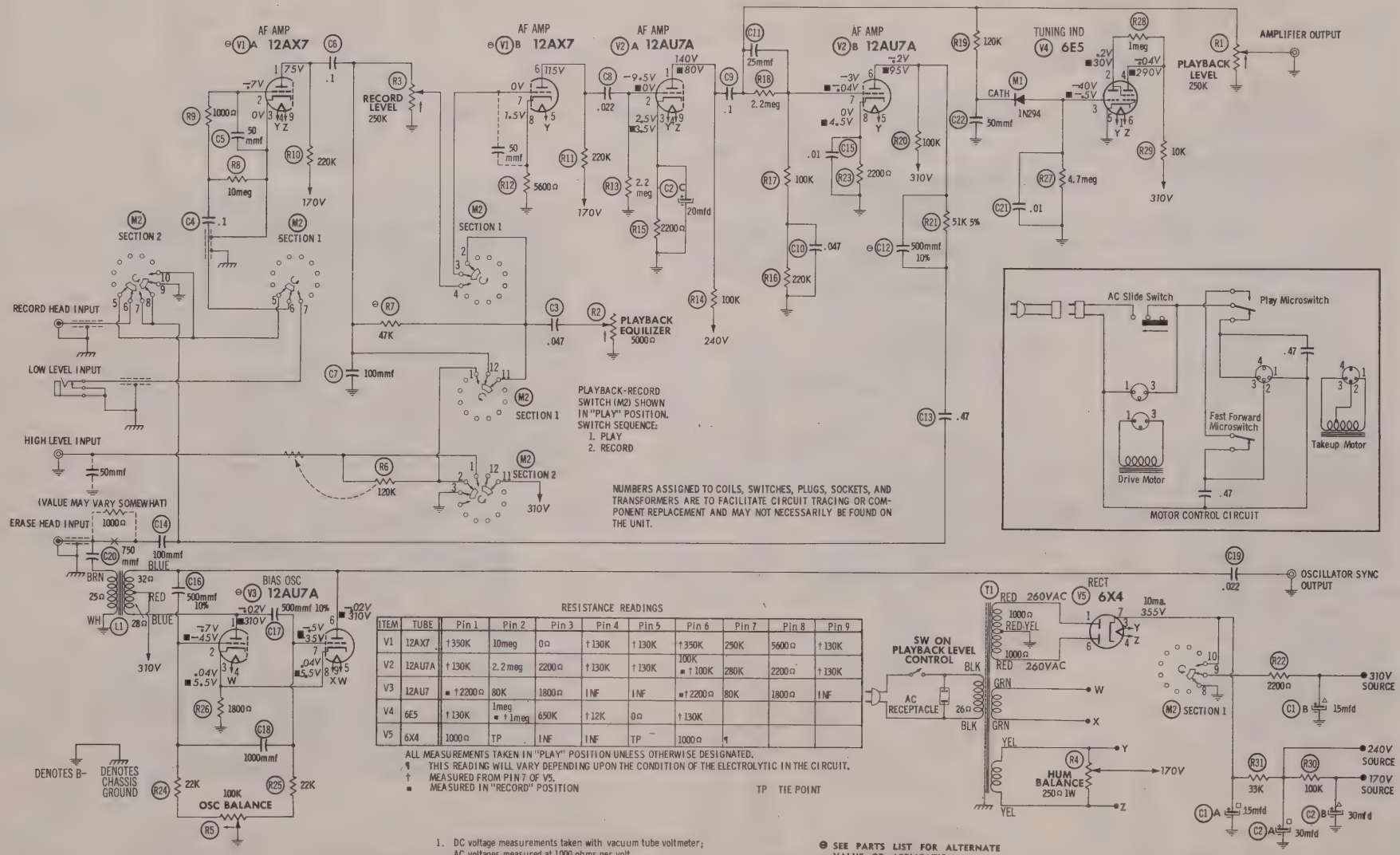
ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		VIKING PART No.	CBS PART No.	SYLVANIA PART No.	
M1	1N294				Overload Limiter (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	VIKING PART No.	NOTES
M2	Switch		Play-Record

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†350K	10meg	0Ω	†130K	†130K	†350K	250K	5600Ω	†130K
V2	12AU7A	†130K	2.2meg	2200Ω	†130K	†130K	100K ▪ †100K	280K	2200Ω	†130K
V3	12AU7	▪ †2200Ω	80K	1800Ω	INF	INF	▪†2200Ω	80K	1800Ω	INF
V4	6E5	†130K	1meg ▪ †1meg	650K	†12K	0Ω	†130K			
V5	6X4	1000Ω	TP	INF	INF	TP	1000Ω	¶		

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
▪ MEASURED IN "RECORD" POSITION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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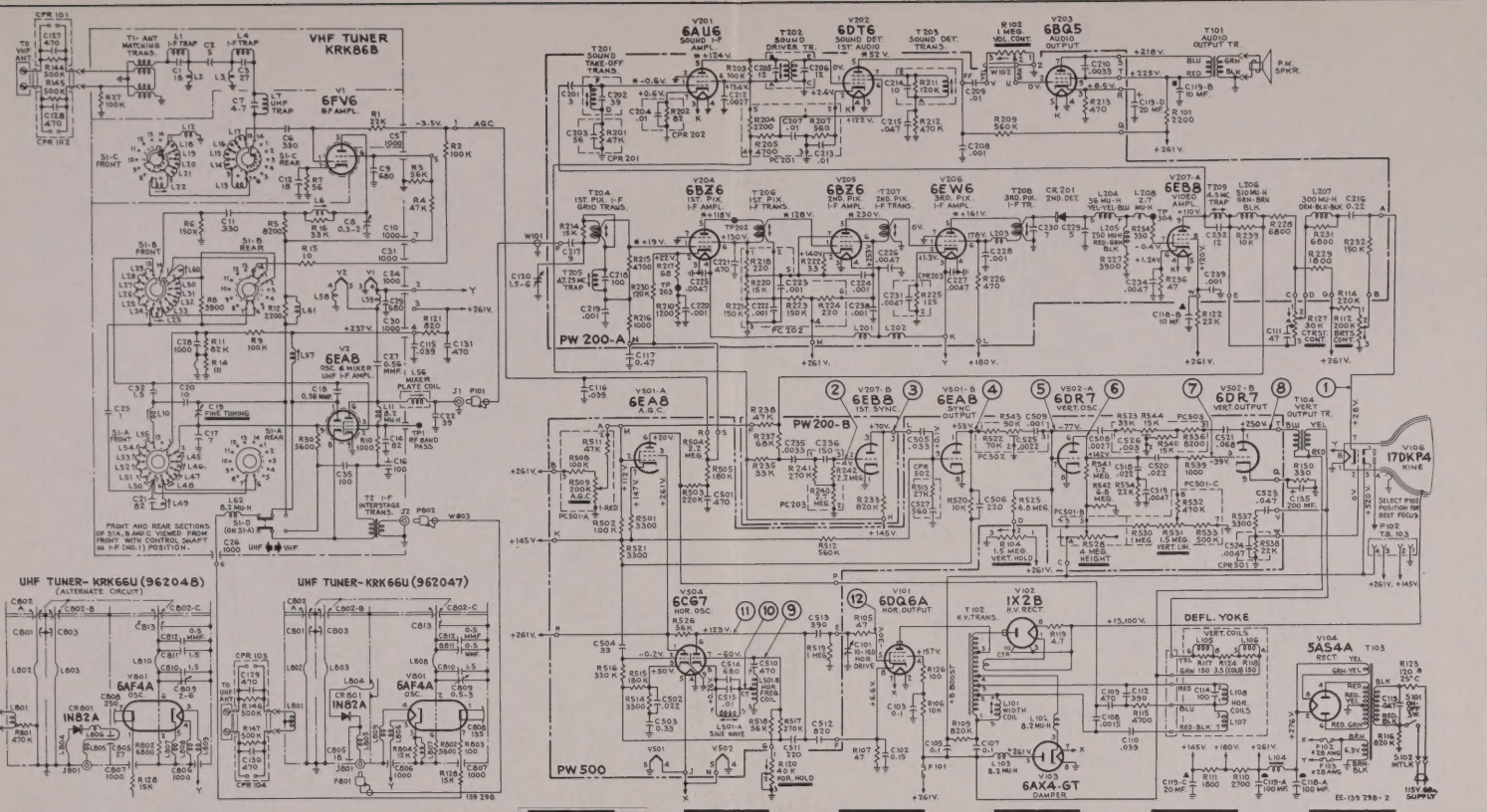
VIKING MODEL 85 Series (Ch. RP-61B)



All schematics are shown in the latest condition at the time of printing.

All resistance value in ohms. K = 1000.

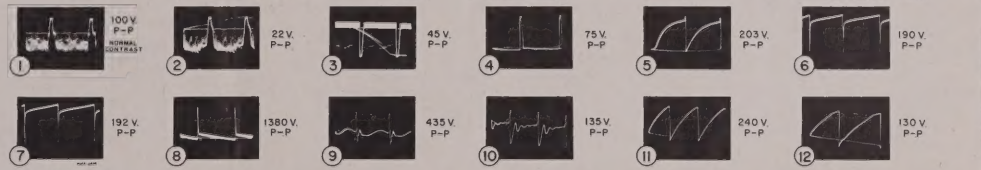
All capacitance values less than 1 in MF and above 1 in MMF unless otherwise noted.

Direction of arrows at controls indicates clockwise rotation.

All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within ±20% with 117 v. a-c supply.

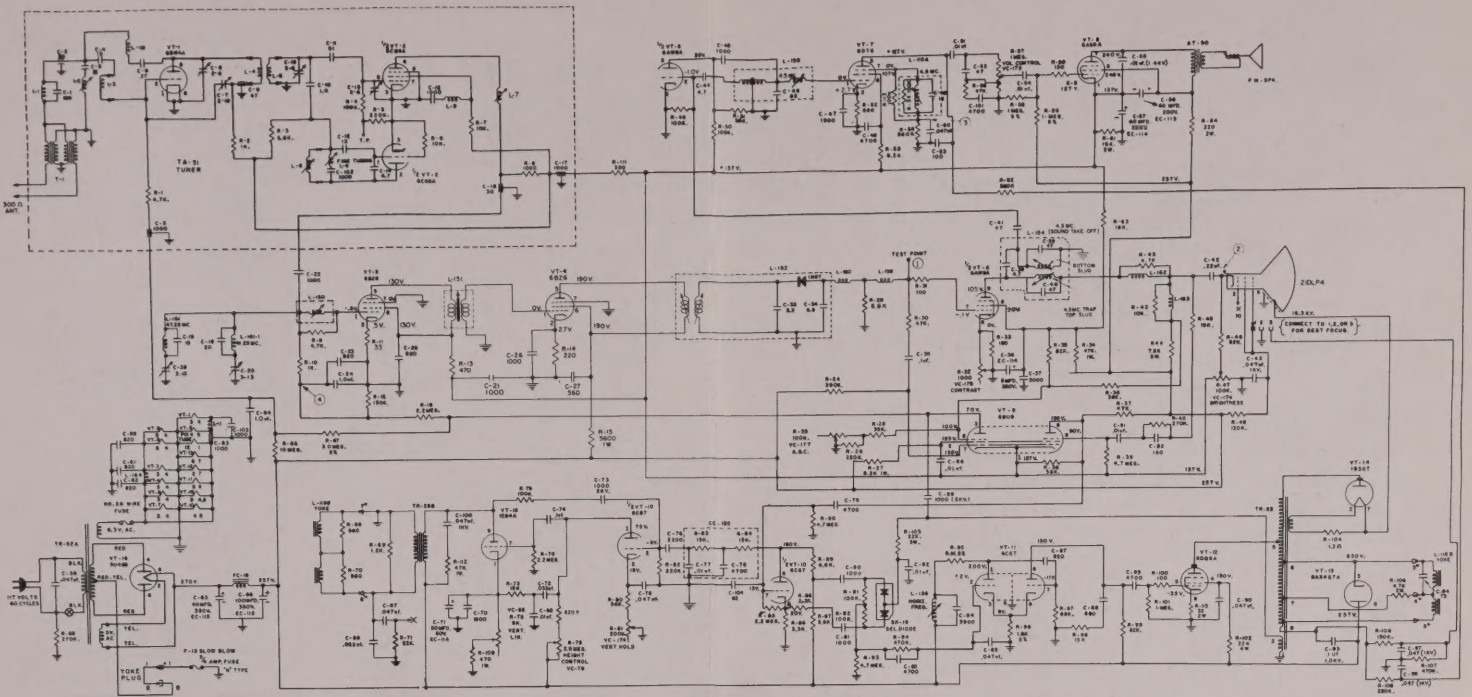
*Measured with 1 megohm, ½ watt resistor in series with meter probe.

Balloons ①② etc., shown on schematics indicate points of observation of the waveforms shown below the individual schematic.



RCA VICTOR MODELS 170P048, U, 170P049, U, 170P060, U, 170P061, U, 170P063, U, 170P064, U (CH. KCS126A, B)

Schematic Diagram Courtesy of Radio Corporation of America



TRAV-LER MODELS 921-K-820, U, 921-T-800, U (CH. 1051-49)

Schematic Diagram Courtesy of Trav-Ler Radio & Tele. Corp.

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